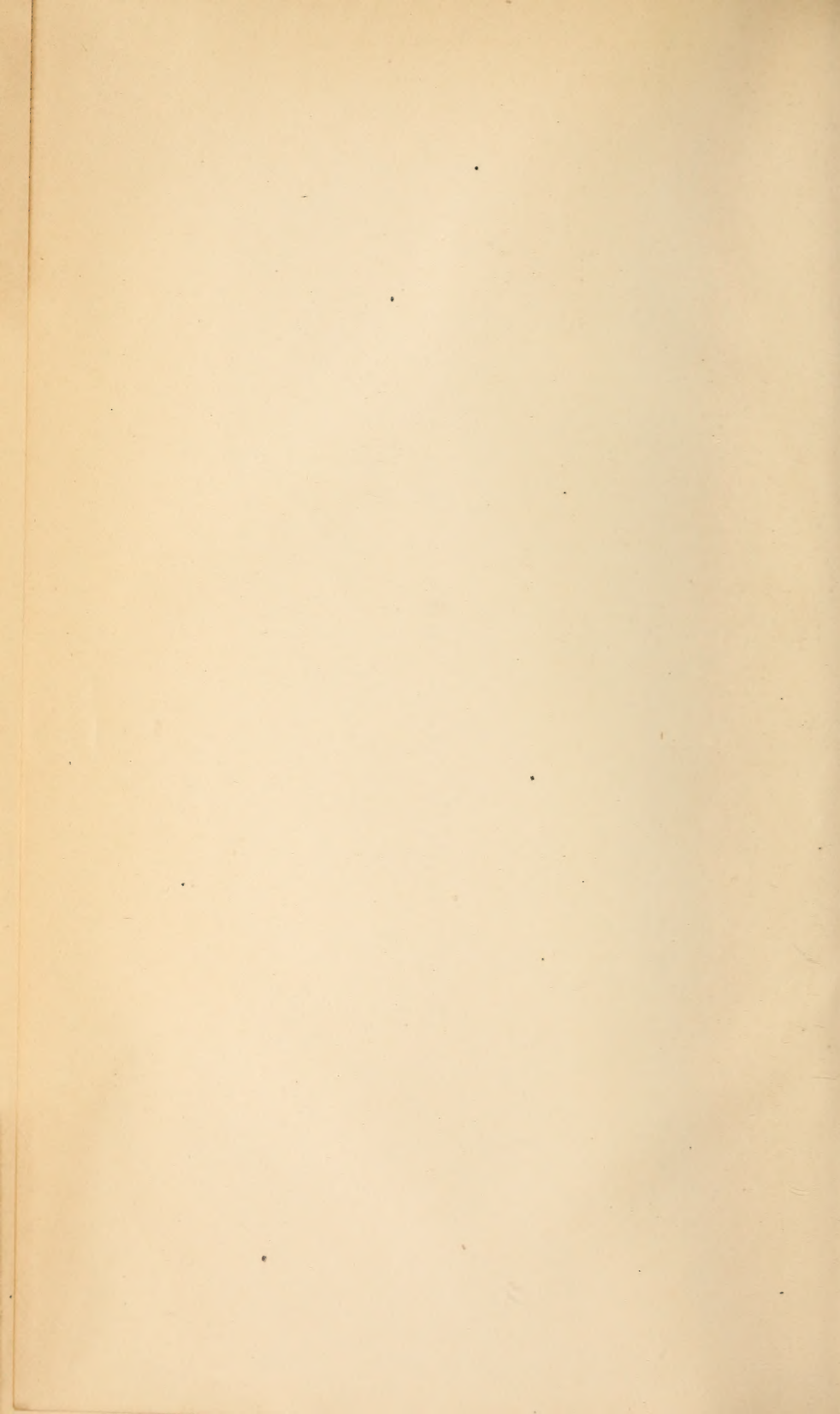






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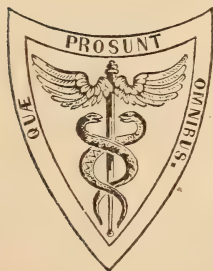
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THE
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FOR JULY 1873.

ART. I.—*Observations on the Means of Arresting Hemorrhage from Deep Cavities, with a Report of a Case of Non-malignant Stricture of the Rectum, and Remarks on the Surgical Treatment of this Disease.* By FREDERICK D. LENTE, M.D., of Cold Spring, New York. Read before the Medical Library and Journal Association of New York, February 7th, 1873. (With six wood-cuts.)

THE principal immediate danger to be apprehended in operations in deep cavities is hemorrhage, and the means recommended for its suppression are, as in other hemorrhages, ligature, ice, styptics, and pressure.

Styptics, unless combined with pressure, are, I think, very uncertain in deep-seated hemorrhages, and, even if they were not, are to be avoided unless absolutely necessary, as they would add to the difficulty and danger of the *after-treatment*, of paramount importance in operations on the rectum.

Plugging the organ, which is only a means of employing pressure, is a tolerably efficient resource; but is to be avoided if possible, as it tends materially to add to the patient's subsequent distress, and to interfere with the after-treatment, as well as to add to the danger of inflammation. If necessary, the method recommended by Allingham, in his recent work on the rectum, is decidedly the best; that is, by passing up a soft cup-shaped sponge, say the size of a large billiard ball, in some cases larger, to above the bleeding points, packing the rectum firmly below it with dampened cotton, to a little above the sphincter, and keeping the whole *in situ* a longer or shorter time, according to the size or character of the bleeding vessels; the bowels being kept at rest, if requisite, by opiates. The sponge should be prepared by passing, as Allingham directs, longitudinally near the apex, a *strong* silk ligature, and bringing it back again through the sponge to the base, from which issue thus two ends; these are kept, while pack-

ing, on either side of the rectum ; and, by drawing upon them, after packing, will spread out the sponge laterally, thus tending to prevent any reflux of blood upward, so insidious, and so much to be dreaded, and also to consolidate the cotton packing below. Allingham recommends, in addition, filling the cavities of the sponge with alum, or the "persulphate of iron," and also to powder the cotton with the same ; this would be, I might almost say, a *certain* means of arresting hemorrhage, however great, or from whatever sources it might occur, with any reasonable regard to prudence in the operation ; but whoever has had to deal with a rectum or vagina, after it has been so treated, would require to be pretty thoroughly alarmed, and at his wit's end for a resource, before he would adopt it. This he might do with great advantage, and without materially adding to subsequent difficulties ; that is, as he comes to any specially troublesome points of hemorrhage, in placing the tampon, piece after piece, to place a very small pledget of dampened cotton, moderately imbued with the sub-sulphate, just over that point, and have it held there firmly by an assistant, while he packs against it his next mass of tampon. It will much facilitate the operation if, instead of pushing up the sponge on the finger as a guide, it be rolled up *longitudinally*, seized, for two-thirds of its length, with the long *uterine* forceps, and passed on Sims' speculum. This is done with the greatest ease. This speculum should also be employed when tamponing. It has also been recommended to pass a small tube, as a portion of No. 12 flexible catheter, into the rectum, and pack around it ; in order that any uncomfortable amount of gas may escape, instead of necessitating the withdrawal of the tampon, as has occurred. This recommendation should never be neglected ; and it would be well not to cut off the *closed* extremity of the catheter, lest the open end be closed by pressure against the wall of the rectum, but it may be better to enlarge the *eyes* of the tube. But, as I have said, with regard to styptics, so I should say with regard to the tampon, in an operation where so much depends on the after-management, and on the parts being left in such a condition as to admit of commencing the dilatation as soon as possible, that, if this very effectual procedure, which it is always comforting to have in reserve, can be dispensed with, without imminent danger of compromising the safety of the patient, it should be done. Another consideration, perhaps still more important, militates against such a procedure. A somewhat violent reaction similar to "urethral fever" after operation on the urethra, attended perhaps by symptoms of blood-poisoning or cellulitis, may set in within the period allotted to the retention of the tampon, and the most efficient means, or one of the most efficient, for relieving this, is the injection of some antiseptic frequently over the cut surfaces. Dr. W. R. Whitehead, in a case operated upon by him, and reported in the *Am. Journ. of the Med. Sci.* for Jan. 1871, injected a solution of carbolic acid when the pulse had risen to 160, and the other symptoms were equally threatening, with the effect of

giving decided relief within ten minutes, and of reducing the pulse to 120 within four hours. He found it advisable to use these injections several times during the day. In case the persulphate of iron is used in conjunction with the tampon, a proceeding very apt to be adopted by those who have not met with the inconvenience by which it is frequently attended, it would be impossible, without incurring serious hazard of great injury to the *rectum*, and of causing a renewal of the hemorrhage perhaps, to immediately withdraw the tampon and sponge. It then becomes important to improve, if possible, upon our other means for restraining hemorrhage from deep cavities.

Ligature and *cold* have already been mentioned. To apply a ligature to a bleeding point high up in the rectum or vagina has generally been considered a difficult feat; but the method suggested by Dr. Whitehead, in the article already referred to, and one described by Dr. Bodenhamer, in an article to be found in the *Medical Record* of Sept. 1st, 1872, render the proceeding comparatively easy. I have, however, simplified the matter further, by contriving a *thread-carrier* still more easy of application. Fig. 1 represents the needle armed with the ligature. It is simply an ordinary

Fig. 1.



aneurism-needle somewhat elongated, and curved more abruptly, and is manipulated very much in the same manner. The bleeding vessel, with some of the tissue surrounding it, having been seized by means of a tenaculum, (the one recommended by Whitehead, and represented full size by Fig. 2, is

Fig. 2.



convenient) and lifted well up, the needle with its thread is passed around, and the thread hooked up and drawn out of the eye, and down through the anus by means of the hook (Fig. 3), which accompanies this needle; a

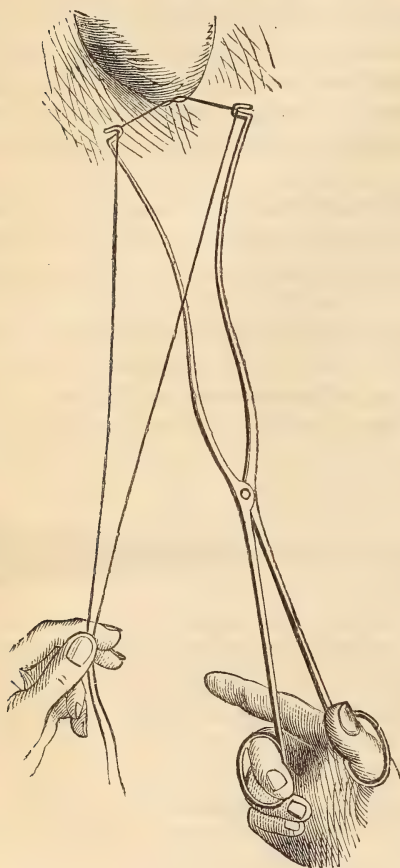
Fig. 3.



knot is then to be made and pushed up as far as may be with the fingers, and completed with some appropriate instrument. With A. L. Carroll's contrivance, Fig. 4, it can be done at any depth as readily and as securely as with the fingers; this is far preferable to the more complicated plan

generally recommended. But the tenaculum, or the forceps commended by Bodenhamer, may tear out of the abnormal tissue in which the bleeding

Fig. 4.



point is situated ; or the bleeding may proceed from numerous points in the ulcerated and congested membrane *above* the stricture. Ligature is then impossible. Cold applications are usually employed here, and Whitehead found ice sufficient to restrain a rather copious hemorrhage. I venture to suggest an improvement in the application of this hemostatic. For the case, I am about to relate, I had procured an ordinary membranous *condom*, and in case of necessity, had intended to fill it with finely pounded ice and salt, and push the end of it up a little past the bleeding surface; should the bleeding prove obstinate, this might be withdrawn as soon as the contents are melted, and another immediately pushed up. In this way the parts may be almost frozen, and it is hardly possible that any hemorrhage could resist it, as it will freeze the skin and subjacent tissue solid in a very few minutes, and render incision bloodless and painless, as first discovered by

Arnott. Or, if it be preferred, the tube of Richardson's spray producer (the bottle containing ether or Rhigolene) may be placed near the bleeding surface, and a degree of cold equal to zero or lower produced very readily. The ether *might*, however, be provocative of irritation or inflammation ; although, applied to the inflamed mucous membrane of the fauces, it is very pleasant.

For the arrest of hemorrhage, there is still another very simple and effectual means, which is to seize, with the long *uterine* forceps, or a dressing forceps, if they will reach, one of the larger sizes of the "*serrefines*" (now seldom used or alluded to) just in front of the joint, press the legs so as to open the points, and snap the latter over the bleeding vessel, whether

vein or artery, including a very little of the surrounding tissue. These might be left to take care of themselves. They hold so tightly that even a moderately solid evacuation might fail to detach them; but they would eventually separate, and, if they should catch at the sphincter, might be readily removed with the finger.

I have but little to say about *torsion* and the *actual cautery*, because, although excellent means in their proper place, they are not applicable when we have the more appropriate means above described. The objection to the actual cautery, recommended by Bodenhamer and others, as the *dernier ressort*, is similar to, and more emphatic than, that which I have advanced against the sub-sulphate of iron and the tampon; the unfavorable conditions for future treatment in which the parts are left, and also the danger of inflammation or sloughing, or contraction during cicatrization.

Before concluding this portion of my paper, bearing on the arrest of hemorrhage *during* the operation, I ask attention to the description of an appliance designed to facilitate the detection and treatment of hemorrhage *subsequent* to it. All writers on diseases of the rectum have narrated numerous instances in which there occurred insidious internal hemorrhage of an alarming and occasionally a fatal character. The symptoms of this occurrence invade so gradually that, at first, they are likely to escape the notice of the patient and his attendant. I quote Dupuytren's well-known graphic delineation of these symptoms:—

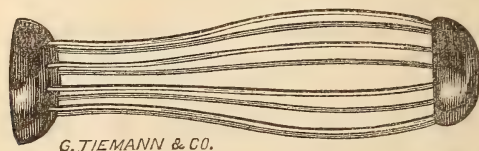
“What reveals it to the eye of an attentive and enlightened surgeon is a sensation of heat which the patient experiences in the abdomen, which seems to advance by degrees as the blood accumulates in the intestines, or he feels colic-pains, and always a peculiar kind of pain, a sort of tenesmus. The abdomen is sore to the touch, especially towards the groin and left iliac fossa. Respiration is difficult and interrupted; the pulse, at first intermittent and irregular, becomes small and frequent; the skin is discoloured; the face is covered with cold perspiration. The restlessness, which the patient first complains of, is quickly succeeded by despair, which is manifested in his conversation; there is an inclination to vomit, or vomiting, with convulsive contractions of the extremities, vertigo, etc.”

The “etc.” we may readily supply. What a horrible spectre to be rising up before one for twelve or twenty-four hours after an operation! To obviate this danger, and this unpleasant anxiety, I venture to suggest that immediately after all operations on the rectum likely to be succeeded by copious hemorrhage, for the first few hours, a wire frame or speculum should be secured in the rectum. This will subserve two purposes. By keeping the walls of the gut apart, it allows air to enter, and prevents the poultice-like action of heat and moisture combined, the most efficient means of favoring bleeding. In case bleeding does occur, it immediately manifests itself to the patient, or to the most ordinary nurse. It gives us another advantage. The attendant, having been previously instructed by the surgeon, may introduce the tube of a syringe into the speculum, and,

having placed a bed-pan properly, pumps into the bleeding rectum a constant stream of ice-water until all danger is over; the water, with or without the addition of an astringent, having so ready an outlet, the cold is kept up, and is thus really more effectual than a lump of ice.

The instrument must be of peculiar construction or it may be injurious in two ways; first, by provoking contraction of the sphincter, and thus inducing tenesmus; and secondly, if the wires are too widely separated, the wounded parts may catch between them, and thus pain, and even hemorrhage, be caused by the withdrawal of the instrument. The dimensions here given, and the mode of construction sufficiently well illustrated by the accompanying drawing, Fig. 5, are supposed to secure all the advantages, and to avoid the dangers, of the instrument. The neck (to

Fig. 5.



be embraced by the external sphincter) is half an inch in diameter, one inch in length. The instrument is four inches in length, and one inch in diameter at its largest part. The wires should be as small as is consistent with requisite strength, and only one-eighth of an inch apart. They should converge at the distal end, so as to give it a conical form, and be capped by polished steel. There are two loops of wire at the external orifice, one above and one below, for tapes to be attached to a band around the hips, to prevent the rectum from ejecting it. This instrument might likewise be used, with advantage, by those suffering from chronic diseases of the rectum, generally of a hemorrhoidal character, and sometimes attended by profuse hemorrhage; and yet who present on examination no great amount of local disease, and, even if they do, are often unwilling to submit to any radical operation. This speculum would afford such persons a very ready means of applying cold irrigation for the arrest of such hemorrhage, especially when so situated as to be unable to procure a competent surgeon.

An instrument, very similar *in form* to this, has lately been devised by Dr. Munde for an entirely different purpose; I believe for preventing prolapsus.

Of course all these measures, except perhaps the last, for the treatment of hemorrhage from the rectum, may be applied to the upper part of the vagina, the cervix uteri, the wound of the lithotomist, etc.; and it may not be out of place to suggest here that in case of any difficulty in procuring a good view of the whole rectum, even up to the sigmoid flexure, if necessary, in consequence of contraction of the sphincter,

or trouble in dilating, it would be preferable to incurring any delay in the arrest of a rapid bleeding, to thoroughly rupture the sphincter. In fact, it is probable that a good deal of the suffering, following operations on the rectum, is to be ascribed to spasmodic contraction of the sphincter, induced by the irritation above, and might be avoided by commencing the operation with its rupture.

I have been led to make the preceding remarks on the means of arresting hemorrhage in deep cavities in consequence of having been called upon to treat the following case:—

The subject of it is a lady of medium stature, but rather spare habit, never having weighed over one hundred and ten pounds, and whose average weight is ninety-eight; present weight estimated by her husband at ninety pounds, which is probably a high estimate. Has never been strong; married at the age of twenty, twelve years ago; has never been pregnant; menstrual function normal. A year after marriage, had “ulcerated sore-throat,” and has “never been well since.” In 1863 Dr. Charles Budd treated her for leucorrhœa and ulceration of the cervix. Her symptoms were much relieved, but her leucorrhœa was never entirely checked. Three years ago the symptoms of her present disease apparently began to develop, but she continued to bear her constantly increasing sufferings, such as are usually described in the books as characterizing this disease, without medical aid, until quite recently, when she called in Dr. House, of Haverstraw, where she resides. Soon after, in the early part of August, 1872, Dr. House asked me to visit her in consultation, and to examine her with him. On so doing, we found a fistulous tract, the existence of which she had for some time suspected, commencing in the rectum, just above the external sphincter, passing between the walls of the *rectum* and *vagina*, and opening into the latter at a somewhat higher level. But in addition we discovered, very readily, a very close *stricture* of the *rectum*, just above the internal sphincter, two inches above the anus. Examination of the *rectum* with the finger was very painful. Having no instruments at hand for further examination of the stricture, Dr. H. was advised to procure suitable bougies, and endeavour to dilate to a sufficient degree to admit of examination by the finger if possible. There was evidently a considerable thickening of the tissues, and deposit around the stricture, as a prominence could be felt in the *vagina*, extending nearly up to the vaginal junction of the posterior lip of the *uterus*. From this it was inferred that the stricture was not an *annular* one, but of considerable length. There was no nodular or irregular feel. Patient emaciated, pale, and evidencing, by her appearance, prolonged suffering, but no look of *cachexia*. Upon questioning patient as to her power of defecation, it was discovered that, for a long time, she had had very great difficulty and pain, and had been obliged to restrict her diet in consequence; she had also been obliged to have frequent recourse to laxatives to render her passages semifluid. Patient was immediately put upon ferruginous tonics, concentrated beef tea, etc. Dr. House subsequently endeavoured to introduce dilators, but could enter only a number four olive-pointed urethral flexible bougie; however, upon seeing the patient soon after with Dr. H., I succeeded in passing a similar instrument of larger size, and we soon got up to number twelve, and patient proportionally improved. I heard nothing of the patient for about three months, when I was informed that the stricture had

again contracted so that only the number four bougie could be passed, and her sufferings had greatly increased. Her husband informed me that it was not uncommon for her to sit, for five or six hours, on the vessel, attempting, with great suffering, to evacuate the bowels. I advised an immediate operation.

On the 5th of November, 1872, at her residence in Haverstraw, I proceeded to operate, with the assistance of Drs. House and Sloat, of that place, and Dr. A. A. Smith, of New York. Her physician had been advised to have the bowels as thoroughly evacuated as possible, the day before, by means of water injected above the stricture through a small flexible catheter; but she had taken medicine, and she fortunately had two semifluid evacuations larger than any she had had for many weeks, but with a great deal of effort.

The patient was placed on the table in the semiprone posture opposite a good light, and was soon thoroughly etherized. On introducing the largest Sims speculum, the stricture was immediately brought into good view, and examined by all present. It presented an irregular opening, about the size of a number four catheter, with callous edges; no impression could, without rupture, be made on this by any dilating instrument. The rectum, in front, around the fistulous opening, and also near the stricture, was in a very unhealthy, vascular condition, and bled freely upon being roughly touched. I had contrived an instrument for *exploring* and *measuring* the extent of the stricture, but the extreme contraction of the lower opening precluded its employment, and I was obliged to proceed in the dark. The anterior and posterior edges of the opening were freely divided with a probe-pointed bistoury. The end of the finger then penetrated about half an inch into a little pouch, and was arrested by a firm and close contraction above; in order to proceed, it was necessary to introduce an ordinary pocket-case director; upon this the stricture was cut *anteriorly* and *posteriorly*, the tissue grating hardly under the knife so as to be heard by all present. I was now, for the first time, able to introduce the finger to the first joint, and with moderate force entirely through the stricture, which, as had been inferred from the projecting ridge in the vagina, was of considerable length, *an inch and a half*, and was very nodular and irregular, suggesting the unpleasant idea of malignancy. Notwithstanding these unfavorable and rather formidable developments, I determined, with the concurrence of the other medical gentlemen, to proceed to the thorough division of the entire stricture; and, at the risk of present danger from hemorrhage (having, it was hoped, so well provided the means for controlling it) to accomplish it by *cutting* almost entirely, in order to avoid, as far as possible, the subsequent dangers, cellulitis, pyæmia, etc., so apt to follow the use of much force, stretching, tearing, etc. I first cut pretty freely posteriorly; and then, as I had such a wall of exudation in the whole recto-vaginal *septum*, equally freely anteriorly, having the finger of one of my assistants in the vagina to warn against a too near approach to the vaginal mucous membrane; in cutting at the upper part, towards the *cervix uteri*, I also relied a good deal on the wall of exudation to prevent wounding the *peritoneum*, which would be otherwise in some danger at this point.¹ Sims' largest blade now slipped

¹ It is a fortunate circumstance for the surgeon, though not for the sex, that most strictures, for which division is applicable, occur in females; as we have in them the advantage of being able to define pretty accurately, through the vagina, the extent to which an anterior incision is being carried, which therefore renders

readily through the entire length of the stricture, and showed the entire anterior wall of the rectum a rough, indurated, irregular surface in consequence of the wide separation of the edges of the incision. The finger could now be swept freely around above the upper margin of the stricture, and encountered a rather roughish, ulcerated surface anteriorly, against the *cervix uteri*. Up to this time the hemorrhage, much to our surprise and satisfaction, had been very trifling. But just now, the effects of the ether passing off to a slight degree, and the patient making an expulsive effort, a considerable quantity of coagulated and fluid blood gushed out of the *anus*, and continued to flow; a piece of ice of considerable size was passed up entirely through the stricture; this, not appearing to check the flow at once, was, as soon as it had liquefied, followed by introduction of a rounded sponge, three inches in diameter at the base, but extremely soft and compressible, and in the manner already described. This was pushed up opposite the ulcerated surface above the stricture, as it was inferred that the bleeding came from this point. This was only allowed to remain a few minutes, and was withdrawn with some difficulty and force, in its expanded condition, by means of the forceps, demonstrating to all present the very complete division of the contracted gut, and also, it may be mentioned, the additional difficulty we should have encountered had it been necessary to follow Allingham's advice to impregnate the sponge with sub-sulphate of iron. The bleeding now appeared completely arrested; and the patient was taken up and laid on a bed in an adjoining room. The pulse, which had maintained the character that it had previous to the operation, now became gradually feebler, suggesting to some the idea of hemorrhage, but no other symptom betokened it, and the introduction of the finger, and then, for certainty of diagnosis, the six-inch tri-valve *speculum ani*, showed its complete absence.¹ In the mean time, the patient had vomited freely several times, and she continued to do so for about an hour, after which it ceased permanently, and the pulse regained its former volume and force. Two subcutaneous injections of Magendie's solution were given, in doses of five drops, during the first hour. Upon recovering complete consciousness patient expressed herself as entirely free from any pain or smarting, and her countenance was perfectly natural.

Nov. 7. Have just received a note from Dr. House dated last evening. He says: "The case, thus far, is progressing as nicely as we could wish. Slept well last night with eight drops of Magendie's solution. Has had no pain whatever since operation. Have given eight drops again to-night to insure a good night's rest. Pulse varies from 90 to 100."

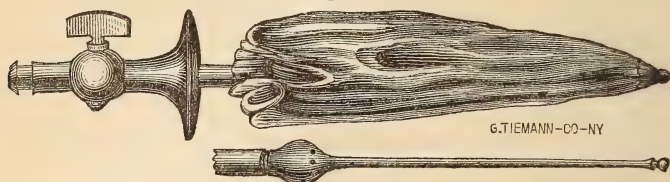
12th. I proceeded to Haverstraw on the 10th to commence the dilatation. Found that the patient had continued to feel perfectly well, "with no pain or ache" since last date; had had natural evacuations, the last one "figured" and as large as the finger; no discharge of blood or mucus. Dr. House washed out the rectum twice yesterday with a solution of carbolic acid grs. xv in water ℥viii, which returned almost as fast as injected, by the rectum and through the fistula. To-day, a considerable portion was retained for some hours, contrary to my intention, and since then patient has complained of dizziness, and of a burning sensation at the epigastrium, and on moving her to get her in position for the operation, she vomited a little. This may or may not be due to absorption of the

this incision preferable, in many cases, to the posterior, if we propose to employ only one.

¹ The idea of the wire speculum had not, at this time, occurred to me.

drug, as she is subject to those attacks, and quite dyspeptic along with her other troubles ; but it suggests a caution in its employment in these cases ; from the use of which my friend Dr. Whitehead thought that he obtained such signal benefit in the relief of the alarming symptoms succeeding his operative procedures. I have directed that only washings with pure water

Fig. 6.



twice a day be used, in the absence of any unpleasant symptoms. On attempting to pass Whitehead's dilator, that which I had already anticipated, from what I considered its faulty construction, actually happened ; and I was much chagrined to find that the further treatment of the case must be postponed until the apparatus could be altered. In the first place the point is unnecessarily sharp, where previous incision has opened the gut to a large extent, and the staff is entirely too flexible ; so that, even when fully annointed, it can scarcely be pushed through a normal sphincter, and then it becomes bent from two causes ; one, the impinging of the point against the gut, the other from constriction of the *anus* pulling up the rubber, in its passage through, and thus drawing the point over still further ; another difficulty arises from air finding its way *between the different layers* of the dilator, and the impossibility of removing it. How the air gets between them, especially when water is the dilating medium, is a mystery. However, on complaining to Mr. Stohlmann of the imperfect instrument manufactured by him, he showed me one which had acted in a precisely similar manner, as regards the bending and the air, in the hands of a surgeon of New York, only a few days ago. The only respect, in which Dr. Whitehead's directions had been disregarded, was that India-rubber tubing had not been drawn over the staff to prevent the macerating action of the water on the whalebone. This would have obviated the trouble to a certain extent only. I can only explain the success, which Dr. W. certainly seems to have met with in the use of his dilator, by supposing that the external sphincter ani, in his cases, was either *stretched* at the operation, or that it was, as is not unusual in such debilitated subjects, exceedingly relaxed. I had the following modifications made—the whalebone replaced by thick brass wire, and terminated by a knob of sufficient size to prevent injury to the diseased mucous membrane and raw surfaces of the *rectum*, with the usual groove behind it for tying on the *capotes* ; these were also put very slightly on the stretch when tied around their open ends so as to limit, if possible, the entrance of air, instead of leaving them hanging loosely.¹

Provided with this improvement I again visited my patient on November 11th, in the afternoon, found her very comfortable and cheerful ; and

¹ At p. 86 of the *Medical Examiner* for Feb. 1845, is a cut of a dilator, contrived by Dr. Mütter of Philadelphia, very closely resembling Dr. Whitehead's, but arranged for inflation by air instead of distension by water. M. Nélaton has also used a similar instrument with air.

proceeded to etherize her, as I had determined to *rupture* the external sphincter, for two reasons. First, to afford perhaps permanent relief to its excessive irritability, caused by long-standing external hemorrhoids; secondly, to allow, for a certain length of time, her attending physician, with some comfort to himself and less distress to her, to continue the dilatation. This was accordingly done, the dilator was passed in with perfect ease, and expanded to the diameter of an inch and a half. I met with no material resistance, and it might have been stretched still further, but it was considered prudent to proceed moderately. The amount and regularity of the dilatation could be estimated, in some degree, by the finger in the *vagina*. But before using the instrument, the amount of water, intended to be used for each application, should be first thrown into the bag and the diameter then measured and noted. Two hours after the operation, when the patient had entirely recovered from the ether, she said she felt perfectly comfortable except a slight smarting of the lacerations at the verge of the *anus*, caused by rupturing the sphincter.

16th. Received a letter from Dr. House to-day, from which I extract the following. "I used the dilator on Wednesday (13th) with some little difficulty, because of the grasping of the instrument by the sphincter, and again to-day, with still more difficulty. So much tenesmus was produced that, after it was filled, it was forced bodily out of the anus. She has had, for the past two days, some discharge of pus. Appetite and digestion much improved."

23d. Received a note from Dr. H. to the following effect: "Mrs. W. doing very well indeed, and I am succeeding admirably with the dilator, by the aid of Sims' speculum. I have not as yet increased the volume of the dilator, because Mrs. W. says she cannot bear any more at present." I had advised the use of Sims' smaller speculum to facilitate the introduction of the dilator by preventing the grasp of the sphincter, and by all means to gradually increase the size of the dilator. Dr. H. also states that Mrs. W. has had no catamenia since the operation. It was due a few days after.

Dec. 6. Dr. House writes that the case is progressing very favourably.

11th. Visited patient in company with Dr. H. Everything as favourable as could be hoped for. Placed patient in Sims' position, and with his large speculum examined the *rectum and vagina*. The examination caused very little distress, and no bleeding; the cut surface is smoothing off, but feels still quite irregular and unnatural. The fistula is *apparently* undergoing a spontaneous cure, as I was unable to pass the smallest probe into the rectum; it passed about half an inch, in an oblique direction upward from the vaginal opening. There is, however, a minute opening, since a little of the water injected into the rectum, for cleansing it, flows out of the vagina. But the fluid feces, which always passed, to a certain extent, through the fistula, have not done so for some time, nor does she now even experience the tumefaction, and feeling of prolapse of the part, which formerly troubled her every now and then. The verge of the anus has also assumed a healthier appearance. The purulent discharge from the rectum has diminished gradually, and she has not had, for a couple of weeks, the bearing down sensation, which, at first, accompanied the accumulation and discharge of purulent matter from the rectum. She has improved in strength and in appearance progressively, and her bowels move regularly and without the slightest inconvenience even when the passage is "formed." Injections are used night and morning merely for

the sake of cleanliness. In the one used at night, carbolic acid and sulphate of zinc are added (15 grs. of each to the pint). If used *in the morning* it always causes pain in the epigastrium, and nausea. The dilator was used by Dr. H. at first every second day, and left *in situ* for half an hour. Latterly, he has used it every third day, and left it an hour. He finds it absolutely necessary to use the Sims speculum to prevent the grasping of the India-rubber by the sphincter. Patient complains of no actual pain from the dilator, but a very disagreeable *pressure*, especially in front, the site of the fistula and of tenesmus. The size of the dilator has been increased gradually, by adding more water (an ounce in all) until, at its most distended portion, the circumference measures five inches.¹ The interval between the last two applications was four days, and the dilatation was more easy and accompanied by less inconvenience, the doctor thinks, than any previous one. He is therefore advised to continue them at that interval. He has used, by my advice, an hour previous to the application, a suppository of morphia and belladonna, gr. $\frac{1}{3}$ each, and he has also continued the hypodermic injection of morphia gr. $\frac{1}{3}$ at the time of application; but which it is now advised to discontinue. Patient sits up now over two hours night and morning. Her pulse has been about 84. Dr. H. has given her citrate of iron and quinia.

30th. Under this date Dr. House writes: "Your letter received in due time, and your suggestions acted upon with benefit to the patient. She seems to bear the dilator better since the interval has been lengthened, but it is still attended with a great deal of pain. I have, at your suggestion, not used it with a greater circumference than five and a half inches." Dr. H. also states that she has had a perfectly natural figured stool each day and without pain. The amount of pus is diminishing under this treatment, and it is of better character.

Jan. 28. Have just received a letter from Dr. House, from which I condense the following facts: "She has been gradually gaining, and is now doing admirably; sits up nearly all day, and walks about at pleasure. I do not find any tendency to contraction. Digestion now good (it will be remembered that her digestion had been for a long time very poor). Pulse very much improved. With regard to the *dilator* she now bears its presence one hour and a quarter with but little inconvenience. But I think this is due, in some measure, to the fact that I have shortened its staff somewhat, since the pain complained of seemed to be caused by the distal end impinging against the gut."²

Feb. 5. Three months after operation, saw the patient to-day with Dr. H., and made a digital examination; find the diseased surface smoother, and not painful to the touch. Patient's general health very good; gain-

¹ A case is related by Mr. Curling (*Obs. on Dis. of the Rectum*) where a "surgeon, not estimating this power [hydraulic pressure] burst the bowel," with a fatal result. The importance therefore of accurately noting the *additions* of fluid, and also the proportional increase in the circumference of the dilator, will be readily appreciated. The gut is not very sensitive, and the pushing of a bougie, or the distension of a dilator, may be carried so far as to do irreparable harm with very little warning, as far as pain is concerned.

² It is well to note this fact; and, where the nature and extent of the obstruction, as in this case, are such as to necessitate a dilator of the full length, to have the staff *curved* so as to correspond with the curve of the sacrum somewhat, and thus avoid impinging against it. It was, probably, to avoid this occurrence, that Dr. Whitehead insisted on so flexible a stem. It is now evident that all the suffering which the patient has experienced from the dilator has been occasioned by its being about one-half an inch too long, or by having no curve.

ing flesh. At the last application she bore the dilator an hour and a half, and could have borne it longer. Advised to increase the intervals between the applications to ten days, and then to two weeks, and to discontinue them, if practicable.

Remarks.—There are some important points established by this case, and which require comment. But I would preface this with the remark that, though stricture of the rectum is, in private practice, comparatively a rare disease, it is not so rare as is commonly supposed. The symptoms of stricture are, for the most part, common to other affections of the bowel; and treatment of these symptoms is, not seldom, carried on for a long time without the medical attendant once suspecting that a tolerably close stricture may exist. “Indeed,” remarks Prof. Mason, in a recent paper,¹ “it was only a short time since that we were informed of the case of a lady who had been treated by no less than seven different physicians for the relief of this symptom [uterine], and yet, not until she had fallen into the hands of the eighth medical man, was her rectum examined, and the source of her trouble detected to be a stricture of the rectum.” Such cases are not uncommon in the pages of most authors who treat of this subject. Since a large proportion of cases of stricture, among hospital patients at least, are caused by chancroids extending from the vulva, we should be particularly careful not to decide upon symptoms referable to the rectum, in the female sex, without a thorough examination.

In the first place, we see that extensive incisions anteriorly and posteriorly are not necessarily followed by troublesome, much less alarming, hemorrhage, provided they are made strictly in the *median line*; next, that it is not necessary, when the stricture has been thoroughly divided at the time of the operation, to commence the further treatment at once, as has been usually recommended, in order to prevent adhesion and possible recontraction. This is important, for, if any decided reaction should ensue, as is commonly the case, or any tendency to cellulitis, it is of great moment to delay as long as possible before commencing fresh irritation.

It will be necessary for my purpose to quote the opinions of several of the most reliable surgical authorities as bearing on this subject; and, in order that this paper, already tedious I fear, shall not be unnecessarily extended, I shall be as brief as circumstances will permit.

Mr. Birkett (*Holmes' Sys. of Surg.*) condemns “deep incisions, and advises that the stricture should be simply notched at several points.”

Velpeau (*Op. Surg.*, edited by Mott), “The annular contractions, or those in the form of a bridle, or that are semilunar, are the only ones that admit of a trial by this process [incision]; and it is only, in fact, for the purpose of preparing or favoring the dilating means to be made use of, that it can be seriously recommended.”

¹ Am. Journ. of Med. Sciences, January, 1873.

Nélaton (*Clinical Lec.*, Atlee) regards incisions in those parts, for the removal of the altered tissues, as dangerous, because "the arteries are quite voluminous, and on account of injury of the veins."

Syme (*Prin. and Prac. of Surg.*) observes :—

"Division of the contracted portion with a cutting instrument, notwithstanding the obvious risk of hemorrhage and inflammation incurred by doing so, has been occasionally practised, and with such speedy, as well as complete relief, that some practical writers regard this method as one which ought to be preferred. But, experience having ascertained that wounds of the rectum, even of *very small extent*, are followed by serious or fatal consequences; and the bougie, though not so speedy in its operation as the knife, being in general equally effectual, and not exposed to the same objections, prudence seems to require that the practice of incision should be either entirely abandoned, or only used in particular cases, with extreme caution."

He alludes to the case of a young lady on whom he used the knife with complete success. But he does not state *how* he used it.

Curling prefers "notching" to a single deep incision. He advises "gentle dilatation on the following day." "Free and deep incisions are," he says (*Obs. on Dis. of the Rectum*), attended by serious risk, and I know of one case in which, after two or three slight notches only, a large abscess formed behind the rectum, and burst into the bowel above the stricture."

Pirie (*Sys. of Surg.*) states :—

"Sometimes, even after the most cautious and gentle use of the bougie, it is necessary to have recourse to the hip-bath and to opiate injections, in order to allay the irritation induced. . . . In some cases, the stricture has been divided by simply notching it in different parts, by means of a blunt-pointed bistoury introduced on the finger; but the very great risk of hemorrhage, the difficulty of checking it, and the danger of inflammation from wounds of the rectum, are serious objections to this procedure, which should only be resorted to in extreme circumstances, and then with the utmost possible caution."

Dr. Gross advises the usually, I may say universally, commended treatment—dilatation by bougies. But, he adds, "The surgeon often incises strictures of the urethra, and why should he not apply the same principle of treatment to strictures of the rectum and anus?"

Allingham (*Diseases of the Rectum*) states :—

"Some strictures are so resilient that they return to their original condition directly you cease to dilate them. They are generally bridle or linear strictures, and they are often benefited by making several *slight* nicks into them, and then gently dilating. This operation I always keep for a last resource; it is, by all means, to be avoided, if possible, as ulceration may, and, I think, often will, ensue. . . . Gentle dilatation is, in my opinion, the best method to adopt. I say *gentle* very advisedly, as, I am sure, the more thoroughly this idea is kept in view, the better it is for the patient. I have seen severe hemorrhage follow Todd's dilator."

Bushe says (*Diseases of the Rectum*, p. 280), "When the stricture is near the anus, narrow and firm, the surgeon may hook it down with his finger, and then partially divide it in two, three, or more points, with a hernia knife."

The latest authorities on this subject and on surgery, Van Buren,¹ Ashurst, Hamilton, and Mr. Bryant, in his work just issued from the London press, add nothing to our knowledge, or our means of treating this disease, and all reiterate the cautions with respect to hemorrhage, to the danger of bougies and the other difficulties alluded to in the above quotations. Indeed, the later the surgical authority, the less he seems disposed to say on this subject. Dr. Willard Parker, in a letter recently received by the writer, says: "The subject of stricture of the rectum and other portions of the canal is still in much darkness. The diagnosis is not always easy, and a non-malignant to-day may become malignant to-morrow. I have seen two cases killed by an attempt to dilate—one 28 years old, the other about 35, both females." He uses for nicking the stricture an instrument contrived by himself, a *bistourie caché* with three blades.

We have here, then, a résumé of what the authorities of the present day have to say on this disease. With such an array against doing anything of a more decided or radical character, the surgeon of less eminence may well shrink from taking such a responsibility. Lest it should seem over-rash and presumptuous in the writer to advocate what has been so decidedly repudiated by so many excellent surgeons, and lest he should seem disposed to place the result of one, or at most two, cases against their combined experience and judgment, he has, at the hazard of extending his article to an unwarrantable length, taken the liberty of quoting their own testimony, and hopes to justify himself, partially at least, by its analysis, in proposing some more radical and successful procedure in these desperate ailments, even if the results of his case and Dr. Whitehead's are left out of the question. In the first place, they almost universally admit, or expressly state, that in no case can a *cure* be expected. Mr. Colles (*Lect. on Surgery*) avows that "we are still in want of a cure for this disease." The exceptions are two cases alluded to by Mr. Curling, and a recent case of Dr. Eager, of New York, referred to by Prof. Mason. Mr. Curling's second case can hardly be considered complete, since there had not been a sufficient lapse of time after the treatment to judge of the permanence of the cure. In the next place, from the cautions which they throw out at every step, and the dangers which they point out, whether the bougie is used alone, or aided by their careful notches, and the actual hair-breadth escapes which they relate, and even fatal occurrences now and then, it is evident that *dilatation*, however skilfully practised, constitutes neither a safe nor a very successful procedure. In fact, the very dangers which they apprehend from free division, and which, not seldom, with all their care, confront them after notching and dilatation, will probably be obviated by it, to a certain extent at least. Thus, to adduce the evidence of the only two cases of *complete division* attainable, Dr. White-

¹ Dr. Van Buren remarks, in a recent letter to the writer, that "this subject will bear a good deal of working up."

head's and the writer's, no serious hemorrhage attended them, and no unpleasant consequences from ulceration succeeded them.¹ As regards the danger from ulceration, abscesses, fecal sinus, etc., following a solution of continuity in the rectum, it is very evident that it is by no means obviated by the operative procedures heretofore recommended, as the experience of the writers from whom quotations have been so freely drawn abundantly testifies. Instead of enhancing this particular danger, there is every reason to believe that an immediate free opening of the gut, producing a comparatively extensive raw surface, instead of two or more small ulcers, will have the opposite effect, from the fact that the exposed surface will be subjected to less congestion, contusion, abrasion, and irritation of various kinds from the passage of fecal matters downwards, and the necessary enemata upwards, in consequence of the unobstructed egress and ingress afforded. If any solution of continuity, then, is determined upon in aid of dilatation, the weight of evidence seems to be that it is safer either to cut largely at one, or at most two, points, or to forcibly rupture to the same extent, than to have three or four *small foci* of danger. Dr. Whitehead's method of limiting and defining the extent and position of the rupture by effecting it as far as possible with the finger, is doubtless the safest method of "forcible rupture" yet proposed,² and, if cellulitis, hemorrhage, and pyæmia are escaped, the subsequent use of his elastic dilator, modified if necessary, will doubtless afford satisfactory results.

As regards the principal objection advanced against this operation, the imminent risk of hemorrhage, I think, with the improved appliances of Drs. Bodenhamer, Whitehead, and the writer, and with the results, in this respect, of the two operations reported, this may be regarded as no greater than in most other cutting operations. As regards the treatment by bougies, and especially those in almost universal use up to this time, it may be remarked that there is no circumstance which probably renders the aggregate amount of injury likely to be inflicted by it greater than by any other procedure. We have seen how very cautious the best surgeons are in their use, and how persistently they inculcate extreme care, and that, even in their hands, serious results ensue. Yet it is a means of treatment within the capacity of the most incompetent and inexperienced practitioner, one not

¹ Copeland (*Observations on the Principal Diseases of the Rectum and Anus*) says, that he has divided *indurated, annular* strictures posteriorly, and that he has frequently seen "the late Mr. Ford" do the same. But he omits to state to what extent the division was carried. Within the past few days, Dr. Mason has sent me brief notes of a case of stricture operated on by him at Charity Hospital by division; and he refers to another case in which he assisted Dr. Watts. He is also of the opinion that Dr. J. R. Wood has operated in this manner. None of these cases have been published; and they were all simple annular strictures, and the incision was confined to the posterior wall.

² If I understand my friend, Dr. J. Marion Sims, correctly, this is the method proposed by him.

possessed of the least surgical dexterity; and the less informed he is, the more likely would he be to proceed rashly from the *apparent* simplicity of the operation. Even the patients themselves, as numerous fatal examples attest, consider themselves fully competent to judge of the proper method of proceeding. The mucous canals, when in a pathological state, from any cause, are sometimes excessively friable, even when no ulceration exists, when to the sight and touch they are apparently normal. This should always be borne in mind when an instrument is to be introduced, or when any rough manipulation is required. In a case of labour, which the writer attended in consultation, where no unusual delay had been allowed, and when the forceps were skilfully employed by the physician in attendance, the operation being called for merely on account of uterine inertia, the vagina tore extensively, almost like wet paper, and the patient lost her life in consequence. Within the past year, I met with a similar case, in which there had not been sufficient delay or impaction to injure the vagina, and where the forceps were applied by a competent and careful physician, yet a considerable rupture of the posterior wall of the vagina was produced. I only discovered it some days after in consequence of having been called in to see the patient for debility, and a rather profuse purulent discharge from the vagina. At a meeting of the Obstetrical Society of New York in 1870, a case of rupture of an apparently healthy vagina by some simple manipulation was reported, and several of the members alluded to similar cases. In one instance, the rupture was caused by coitus. This condition may be, in the case of the vagina, rather the result of a congenital tenuity of the tissue than of pathological change;¹ but a similar pathological condition would seem much more likely to occur in the rectum than in the vagina, since its integrity is so much more frequently impaired by disease; and I allude to these instances because they are not often referred to by authors, and indicate, in addition to the evidence already adduced, how dangerous, in all cases, the pressure necessary to force an ordinary rectal dilator through a tight stricture may become even in competent hands; how much more so then in the hands of those entirely unaware of these quicksands! Mr. Bryant (*Pract. of Surg.*, p. 296) observes, "The surgeon is seldom applied to until ulceration has already occurred, when dilatation is *clearly useless if not injurious*." If such be the fact, and it is probable that, in most cases, it is so, it is singular that he is the only surgeon who has, so far as the writer's researches have extended, placed this limitation to the operation by dilatation.

¹ A similar condition of the *uterus* not infrequently presents itself (*marciditas uteri*), and has led, now and then, to perforation of its walls with a sound, even in the hands of careful and experienced physicians, and with a surprising immunity from serious consequences.

Another important fact is frequently overlooked, or generally unnoticed by writers on this subject, in determining upon the necessity or the urgency of operative interference; namely, that there is danger to life, that is, sudden danger, before the stricture becomes so close as to cause considerable pain, or to manifest its presence by any grave constitutional symptoms, or even by any symptoms at all. "In one remarkably interesting specimen," Mr. Birkett states (*opus cit.*) "in the museum of the College of Surgeons, a stricture of the rectum, which had existed for years, had suddenly become entirely closed by effusion of lymph from the irritation of a fish-bone, which had been swallowed, and had become arrested at the contracted part." "I know of several instances," says Curling (*opus cit.*) "in which an occurrence of this kind (lodgment of a foreign body) first led to the detection of the complaint." I abridge, from the *New York Journ. of Med.* for November, 1846, the following interesting case, reported by E. A. Vanderpool, M.D.

"Three weeks ago, I was called to P. K., a young man who had swallowed a peach stone two days previously, and was suffering from ineffectual attempts to void it." The cathartics used had no effect. "Eight days after, again sent for. Examining him *per rectum*, I discovered, at the depth of three inches, a *firm annular stricture* which felt as if a thread was drawn so closely around the gut as only to admit the point of the finger by pressure, and was undilatable by any force I could exert, for some fifteen minutes, against it. Next morning, I visited him in consultation with Dr. John Watson (of the New York Hosp.). On examination, the pit could be felt lying crosswise above the stricture, having acted as a valve."

"There is a striking analogy," according to Pirrie, "between the condition of the parts in stricture of the urethra and in that of the rectum," and the same accidents, it may be remarked, attend the treatment by bougies and by divulsers in the one as in the other—rupture of the walls of the canal, hemorrhage, abscesses, and sometimes deaths, though the consequences of these accidents are, of course, far less serious, as a general rule, than in the rectum. Reasoning then from analogy, we might infer that a mode of treatment which would be safe and effectual in one would be so in the other, and possibly such will prove to be the fact. My friend, Dr. F. A. Otis, has directed the attention of the profession, in a paper read before this association, to a most important fact, which has very generally been overlooked by surgeons—the effect of strictures of the urethra of "extreme calibre" in perpetuating troublesome affections of the genitals, for which no adequate cause can be discovered, since no stricture is discernible by the means usually employed, the passage of a No. 12 bougie into the bladder. This has generally been considered the *experimentum crucis* until the appearance of Dr. Otis's paper. But he has demonstrated, that it is only by the passage of a "bulbous sound" of unusual diameter that a negative verdict can be pronounced; and that it is only by the *complete division* of any portion of the urethra where this may be arrested that the symptoms can be permanently subdued. In

an article on this subject in the *New York Med. Journ.* for February, 1872, he says :

“Of what possible consequence, it may be asked, is the presence of a stricture, of a calibre sufficient to permit the passage of a No. 32 F. sound, where the normal calibre of the urethra is evidently several millimetres smaller? Briefly, that experience has shown the power of such strictures to keep up irritation, and even a purulent secretion at various points along the urinary tract. Simple over-distension of such strictures, or of *any* strictures, is at best but a temporary expedient. Complete rupture or complete division is the only method by which the speedy return of a stricture to its original point of contraction can be prevented.”

These remarks of Dr. Otis are quoted because they are very pertinent to the point which I am anxious to establish, namely,—that, if the stricture of the rectum be not pretty thoroughly divided, and at once, we shall be likely to have more troublesome complications, and more delay and difficulty in the after-management, with almost a certainty of failure as regards a permanent cure. I say *pretty thoroughly* divided, because, in some cases suitable for the operation, a *complete* division is obviously neither always practicable nor necessary. Dr. Otis has lately informed me of another very pertinent and important fact—when he has divided these strictures *with the knife*, they have required no after-treatment whatever, no bougies to keep them open; but, months after, they are perfectly patent.¹ It may be objected that Dr. Otis's operation is only the “nicking” process, and not a free *division*; but the complete preliminary *stretching* of the stricture by his instrument, upon which he insists, with the consequent condensation of the tissues which it involves, renders his nick equivalent to a deep incision, so soon as the dilator is withdrawn. To what extent we may also in the case of the *rectum* be able to dispense with the tedious, annoying, and somewhat dangerous introduction of dilators, after operation, time and further experience must determine. There is great discrepancy in the advice given by different writers as to the management of the dilator, especially as regards the interval which should elapse before commencing, after cutting, and that between the subsequent applications. There is no doubt that with the usual cutting operations, the slight notches, dilatation should be commenced very soon after—twenty-four or forty-eight hours. But, on the contrary, in the case here reported, the lapse of a week was followed by no tendency to contract; and Dr. House states that the longer intervals were followed by an easier application of the dilator. It is possible that it may with great advantage be dispensed with entirely. Many also

¹ Since the above was written, I have, through the kind invitation of Dr. Otis, been enabled to examine three of his worst cases, there having been from four to six strictures. I passed No. 30 and 31, French scale, diameter about one-third of an inch, of Dr. Otis's bulbous bougies, backwards and forwards, through the urethra, without detecting the least contraction, and without causing even an uneasy sensation on the part of the patient.

advise that it be left in for hours. This is attended by considerable risk, and with anything but benefit, as in the case of the urethra. It is possible that five or ten minutes is long enough, unless a very small dilator, one which causes very little tension, or none at all, be used; the idea being not so much to *stretch the canal*, as to bring about such a degree of excitement, and activity of the absorbents, as shall stimulate them to remove gradually the fibrous effusion.¹

Even in *malignant* stricture, and in cases where nothing but palliation can be expected, I see no reason why the operation should not be attempted, and it is precisely in such cases that it would be likely to indicate its superiority, as to safety, over the other measures except colotomy; as much less *violence* is done to the diseased tissue, and there would consequently be less danger of stimulating the heterologous elements into increased activity. The temporary success and quite prolonged relief, which have been recently afforded by the use of cutting instruments in the case of malignant disease of the uterus and vagina,² warrant a greater success in the case of the rectum, where neither the amount of disease is so great nor its progress so rapid. From consulting the different writers on the subject, it is also evident that a diagnosis between malignant and non-malignant stricture is, in some cases, very difficult if not impossible; to which Prof. Parker's remark is *apropos*, that "a non-malignant to-day may" (in the opinion of the surgeon) "become a malignant to-morrow." In such cases, to quote the words of Sir Charles Bell, "You have only to hope that it is not *the disease*, but an aggravated condition of stricture." He is here speaking of what he terms *scirrhus contracted rectum*; which term Mr. Colles in his "lectures" employs, but condemns as tending to mislead, since the disease thus designated by different writers is, he contends, generally of a non-malignant character. In all these doubtful cases at least, and as soon as the patient's condition becomes serious, *not desperate*, operation on the rectum is certainly preferable to a lingering and painful death, or what, to some patients, would be a scarcely less terrible alternative, *lumbar colotomy*. Some patients, after the latter operation, have lived their brief residue of life in comparative comfort with very great relief, it must be admitted, from their terrible physical suffering, but no one can possibly appre-

¹ It will have been perceived, from the notes of this case, as taken by Dr. House, that this plan has not been strictly followed out in its management. But my opinion of the advice usually given, in this respect, like that concerning many other points in the treatment of stricture, has been undergoing a gradual change during the progress of the case, and of my examination of cases treated by other surgeons, and I have to-day, Jan. 28th, notwithstanding the very favourable report of the attending physician, advised that the duration of the application be much abbreviated. However, as a general rule, it may be said that the duration of the application should bear some relation to the length of the interval.

² See Am. Journ. of Obst. for August, 1872, and Med. Record for December 16th, 1872.

ciate the *discomfort* but the sufferer; and I incline to agree with the opinion of Sir Charles Bell, that, as a general rule, "the unfortunate person had better cease to be;"¹ that is, supposing the question of operation has only reference to the prolongation of life, and not to the relief of otherwise irremediable suffering.

Viewed in one aspect, we must regard the operation of colotomy more favorably. The difficulty of diagnosis between malignant and non-malignant stricture has already been adverted to. The operation, therefore, undertaken simply to relieve pain; perhaps, at the same time, to prolong life to a moderate extent, may indirectly prove curative. In this connection, I beg your attention to a very interesting and instructive case of rectal stricture. Through the courtesy of Prof. Mason, Surgeon to the Roosevelt Hospital, I was permitted to examine, a few days ago, in the wards of that noble charity, one of his successful cases of lumbar colotomy.

The patient, a middle-aged man, entered the hospital in June, 1872, and was examined by Dr. Mason and some of his colleagues attached to the hospital. The characteristics of malignancy were so marked as to force the doctor to the "conviction" that he had to deal with a cancer of the rectum. Though a bougie of considerable size, cesophageal I think, could be passed, the man's sufferings were so great as to render his entreaties for the operation importunate; it was accordingly performed by Dr. Mason with his usual success. The man is now walking about with very little appearance of disease about him, and no suffering.

Upon passing my finger into his rectum, I discovered, at the usual site of fibrous stricture, a simple annular coarctation, which admitted, tightly, the last phalanx of the index finger, and which felt as if merely a string had been drawn around the gut; otherwise no evidence of disease whatever; the rectum being as soft and supple, to *my* touch, as it ever was. That is, in less than seven months from the time when all cause of irritation was removed, the conditions, which necessitated a diagnosis of cancer, had disappeared under no other special treatment than colotomy; just as puncture of the bladder, in case of impermeable stricture of the *urethra*, by relief of irritation, so modifies the stricture in a short time, that an instrument, sometimes of considerable size, may be passed, and a cure thus inaugurated.

Now, although it is held by some writers, that a prolonged irritation of a non-malignant disease may induce cancer, it is hardly supposable that the mere *removal* of irritation could convert a malignant into a benign disease. We are therefore driven to the conclusion that this was originally a simple annular stricture; which, at least up to a certain point of its existence, might have been divided, the sufferings of the patient as readily relieved as by colotomy, and a probable cure at the same time effected.² And this is one of the strongest arguments in favor of applying our cutting

¹ Institutes of Surgery.

² It is proper to state that Prof. Mason, in a letter to the writer after a recent examination of the patient, says: "The result of the case, however, has often made me question that opinion" (as to its malignancy).

operation to the seat of disease instead of to the colon ; that, when a cure is practicable, we effect it by one operation instead of two, and thus, of course, in properly chosen cases, with so much less danger and suffering to the patient. In many cases of genuine and unmistakable cancer, as in eight out of Mr. Allingham's eleven cases, (op. cit.) only colotomy is possible.

From my own somewhat limited observation, but especially from a study of the pathological conditions described by others, I conclude that many cases of non-malignant stricture are originally annular and simple, and that the various causes of irritation and contusion, to which, after a certain period of their existence, they are subjected, develop the irregular deposits, hyperæmia, ulcerations, etc., so characteristic of cancer, as, in addition to the general aspect of the patient, closely resembling the cancerous cachexia, to deceive the most accomplished diagnostician. The remarkable effect of colotomy in improving the condition of the ulcerations attending stricture, was noted by Allingham after one or two of his operations for non-malignant stricture. Indeed he recommends the operation rather for this form of the disease than for cancer ; though at least 8 of his 11 cases, published in St. Thomas's Hospital Reports for 1870, are clearly cancerous. He also remarks that the operation (colotomy) does not invariably remove all the unpleasant symptoms, nor even the most prominent one, in many cases, "straining," as this sometimes continues even when there is no accumulation of solid feces in the rectum. In Dr. Mason's case, I found quite solid fecal matter adhering to my finger after my examination.

In conclusion, and to sum up some of the evidence which has been adduced in favor of preference for *division*, it may be stated, that colotomy is not unattended by the usual dangers of great operations, especially when the peritoneum is invaded ; that, in many of the cases for which it is recommended, division is feasible, as effectual for immediate relief, with the advantage of being possibly *directly* curative, and not through a subsequent serious operation ; that, in the present state of our diagnostic knowledge of the subject, a differential diagnosis between malignant and non-malignant stricture is impossible ; that, even if malignant, division is, in a certain proportion of cases, capable of affording the temporary relief of colotomy, with at least *as little* danger to life ; that, although the operation of *complete division* (anteriorly and posteriorly), having been so seldom performed, cannot very confidently appeal to experience to prove its superiority as a curative measure, we find that, the more nearly this method has been approached, in the practice of various surgeons, as by posterior division, or by deeper notching than usual, with a corresponding diminution of resistance to the subsequent passage of dilators, the more satisfactory and speedy, as a general rule, has been the after-treatment ; while the brilliant results, which have thus far uniformly attended this method of operating on analogous conditions of the urethra, give promise of similar, if not as complete, success in

the case of the rectum. Finally, that, although I adduce but one case of my own to illustrate the positions taken in this paper, it ought to be borne in mind, in estimating its corroborative value, that a more formidable one for this operation could hardly have presented itself, where any operation, short of colotomy, would be thought of; the patient's general health, and especially her digestive power, being greatly impaired, the stricture unusually close, entirely undilatable, not admitting the finger as a guide, its linear extent, and great irregularity and nodular condition, giving it much the character of what is commonly diagnosticated as cancerous stricture, and *scirrhus contracted rectum*.

COLD SPRING, Feb. 5th, 1873.

NOTE.—Since this paper was put “in press,” I have met with M. A. Muron's report of the clinical remarks of M. Verneuil, on his operation of stricture of the rectum, styled by him “linear rectotomy,” and published in the *Gazette Médicale de Paris*, for Jan. 4.¹ M. Muron alludes to the analogy of this operation with external urethrotomy or external cesophagotomy, as I have already done with regard to *complete section* (internal) of stricture of the urethra; and, I may also add, of the recently advised division of stricture of the lachrymal duct.

He goes on to remark that, although the level, to which the peritoneum descends posterior to the rectum, varies in different individuals, “*Il semble que le chirurgien peut atteindre, sans danger, ceux qui ne dépassent pas 10 centimètres à partir de l'anus.*” He insists that the section directly in the median line (posterior) is free from danger of hemorrhage. He remarks upon the “immense progrès” which this operation constitutes in the history “*de thérapeutique des rétrécissements du rectum,*” which, if one consults, he will see “how little efficacious the former methods have been.” He goes on to say that the surgeons of Paris have heretofore come to look upon these strictures, as I have shown that English and American surgeons have done, “as not amenable to radical cure, and as pretty sure to terminate fatally sooner or later.”

As regards the results in three cases of *cancerous* rectum, subjected to this operation, and which I have ventured, in the above article, to include among the cases suitable for *division*, I quote his language: “*Il s'agissait d'à moins drir les accidents,*” and that, “in this point of view, the operation was very useful to the sufferers.”

I shall take occasion, in a future paper, to discuss this operation of M. Verneuil. I will only remark now, that, in the cases of males, the posterior operation would probably be, as a general rule, all that is necessary or perhaps safe, but that, in the case of females, notwithstanding the somewhat greater proximity of the peritoneum to danger, and the additional risk of hemorrhage (if there is any) from the anterior incision, its advantages, pointed out in this paper, more than counterbalance those objections, especially when it is borne in mind that in females, among whom these strictures usually occur, the fibrous deposits are generally far more extensive in front than behind, which, it seems to me, a prudent surgeon would not leave untouched, however freely he may have di-

¹ See No. of this Journal for April, 1873, p. 549.

vided posteriorly. It is with great satisfaction, however, that I find my positions unexpectedly fortified by so good an authority as M. Verneuil and the few other eminent Parisian surgeons who are represented as having repeated his operation. I have also just learned, from my friend Prof. Mason, that he has, within the last fortnight, at Charity Hospital, successfully performed "linear rectotomy."

COLD SPRING, May 13th.

ART. II.—*An Examination of the Causes, Diagnosis, and Operative Treatment of Compression of the Brain, as met with in Army Practice.* By S. W. GROSS, M.D., Lecturer on Diseases of the Genito-Urinary Organs in the Jefferson Medical College, and formerly Surgeon and Brevet Lieut.-Col. U. S. V.

THE symptoms of compression of the brain are those of profound insensibility and paralysis of motion and sensation, as denoted, briefly, by utter unconsciousness, opposite hemiplegia and anæsthesia, full, slow, or laboured pulse, dilated and fixed pupils, and stertorous breathing. The agents which induce these phenomena, and which exert a most decided influence on the question of the propriety of surgical interference, may be divided into two classes: first, those which call forth early symptoms; and, secondly, those which excite late symptoms. The former are sufficiently voluminous to diminish the intracranial space, thereby compressing the tissues of the brain, and driving out its normal fluids, while the latter act rather as foreign bodies and sources of irritation, which, while they do not encroach materially on the cavity of the skull, equally lead to disturbances of the cerebral circulation, through irritation of the vaso-motor nerves, or anæmating spasm of the vessels, or through changes effected in connected nervous centres.

When the compression depends upon the first class of causes, as an extensive depression of the bones, or a large clot of blood, surgeons are agreed as to the propriety of operative measures; but, when it is produced by an insignificant foreign substance, as an osseous spicule, or a few drachms of pus, they are not so unanimous in this regard. In the former case the importance of relieving a true source of pressure is fully recognized; but in the latter it appears to me that another equally weighty object in interference is too much overlooked, namely, the removal of a source of irritation. A small collection of pus, a ball, or fragment of bone, does not awaken primary symptoms of compression; but these are preceded by signs of irritation. Among the most reliable phenomena of suppurative meningitis after gunshot injury of the skull, for example, are

intense headache, high febrile action, convulsions, and delirium, a group of signs which points to exalted excitability and mobility of the nervous centres. Unless this condition be relieved, hemiplegia, dilated pupils, retarded pulse, and coma rapidly follow. The same is true of a small abscess of the cerebrum, in which the symptoms of paralysis of the motor and sensory ganglia are certainly rather ascribable to changes induced in the surrounding tissues than to pressure. Hence the question of operation in certain cases should be based upon phenomena which are really not those of compression. In suppuration of the membranes, or of the substance of the brain, the aim of the surgeon should be to anticipate consecutive trouble, and to get rid of a localized source of irritation, thereby preventing the extension of the inflammatory process.

My objects in writing this paper are to direct attention to compression as it occurs in army life, to contrast it with cases that occur in civil practice, and to endeavour to lay down certain rules by which the differential diagnosis of this affection, particularly when it depends upon effusions, may be determined. The great difficulty in deciding the question of surgical interference is the uncertainty of the precise locality which the pus or blood occupies; but I believe that if my own researches are sustained by future observations, they will do much to clear up this point. I shall comment upon compression in accordance with the nature of its exciting cause, as extravasation of blood, effused pus, depressed bone, and foreign bodies.

1. COMPRESSION FROM EXTRAVASATED BLOOD.—This cause of cerebral compression is less often met with in army than in civil practice; but, when it does occur, it is generally due to gunshot fractures with depression, although a simple fissure, or contusion of the skull, with secession of the dura mater, may be sufficient to give rise to it. The blood may be poured out, 1st, between the dura mater and the cranium; 2d, in the sac of the arachnoid; 3d, on the surface of the brain; and, 4th, in the substance of the brain. With the exception of the first site, the effusion is always due either to direct injury by a missile which penetrates the brain, and opens a large vessel, or to laceration and contusion of the brain. Little, therefore, is to be expected in the way of surgical relief, when the extravasation is situated in the last three positions. Sanguineous effusion *between the skull and dura mater* is more common in army experience than extravasation into the cavity of the arachnoid, the latter, according to the observations of Mr. Hewett, being more frequent in civil hospitals, and depends upon (a) laceration or puncture of the middle meningeal artery; (b) rupture of the small vessels which pass from the dura mater to the skull; and (c) injury of one of the great sinuses; the relative frequency of these different lesions being in the above order, at least one-half of the instances being due to the first cause.

a. By far the most frequent, serious, and fatal cases are those in which

the anterior branch of the middle meningeal artery is opened, at the lower and anterior angle of the parietal bone ; but the amount of blood effused depends upon the extent of the attendant separation of the dura mater ; the symptoms being influenced by the rapidity of the extravasation. In general, the quantity is large, even nine ounces, as I once witnessed, being collected into a dark, dense mass, which strongly adheres to the dura mater. Some writers assert that, when this vessel is lacerated, the resulting clot may be small; and act as a direct compress upon the bleeding point; but I am satisfied that, however plausible this fancied action may appear in books, it never occurs in actual practice, since the dura mater is always extensively separated by the blow which induces the accident, and the hemorrhage is so considerable, that a large cavity or depression is formed on the surface of the brain, which yields to the pressure. Even in cases where the clot is large and thick, the bleeding does not always cease, as I have observed in two instances in private practice, in which fluid blood continued to flow from the openings made by the trephine.

The middle meningeal artery is usually ruptured by direct gunshot injuries of the temporal regions, in which the bones are fractured and depressed or splintered, although counter-fissure of the middle fossa by projectiles striking the side of the cranium, may occasion the lesion, as in the example narrated hereafter. Of eight cases that I have examined, six were instances of depressed fracture of the temporal fossæ ; one of fracture without depression ; and one of contusion of the right parietal bone, with fissure of the opposite middle cranial fossa, extending through the bony canal in which the vessel was lodged. The last case, which occurred in my own practice, being the only one of the kind in army surgery of which I have any knowledge, its peculiarities will be pointed out presently. In all of these examples, the extravasation was extensive, the clots being thick and large. In six, the symptoms of compression appeared at a period varying from twenty or thirty minutes to several hours ; in one on the third day, and in one they were delayed until the sixteenth day.

b. The blood may be poured out by the very numerous small vessels which pass from the dura mater into the cranial bones ; but the quantity is not nearly so large as in the former instance, nor are the cases so fatal. Of seven examples of compression, dependent upon this form of extravasation, all were associated with fracture and depression ; but, with two exceptions, the displacement was trifling ; and in all, the clot was seated between the displaced bone and dura mater, so that the former really did not irritate the latter. The situation of the clot was in one at the top of the skull ; in two at the parietal regions ; in two at the occipital ; and in two at the frontal region ; and the extent of the effusion varied from about two to fourteen drachms. In 4 instances, the symptoms set in in a few minutes ; and in 3, they were delayed respectively until the third, sixth, and sixteenth day.

c. Laceration of one of the large sinuses of the dura mater may furnish the cause of the compression, the longitudinal being more frequently injured in army surgery than any other.¹ When the fracture has an external communication, it permits the blood to escape freely, and there is no collection beneath the bones; but, where the scalp is uninjured, the blood may accumulate, and give rise to symptoms. Such cases must, however, be very rare, as I have been unable to discover a single instance due directly to gunshot wounds.

Mr. Guthrie has reported the case of a dragoon who was wounded in the body by a musket ball at Salamanca, which caused him to fall from his horse on the top of his head. Coma supervened; the scalp was opened, and blood was seen to be flowing through a separation of the edges of the sagittal suture. The symptoms increased, and, on the twelfth day, two crowns of the trephine admitted of the escape of some blood which had collected beneath the bones from a laceration of the longitudinal sinus, when the compression disappeared and the man recovered. (*Commentaries in Surgery*, 6th ed., p. 373.)

There are not a few cases to be found in the reports of campaigns, in which projectiles have driven pointed fragments of the broken skull into the longitudinal sinus, thereby forming obstacles to the hemorrhage until they were removed, when, the blood escaping externally, there was no compression; but I have failed to discover more than one example of compression from extravasation from this sinus, and this occurred without fracture of the skull, and, so far as I am aware, it is the only fatal example of rupture of the sinus by gunshot on record.

A rifle ball divided the scalp and pericranium to the extent of four inches obliquely across the posterior extremity of the sagittal suture. There was instantaneous vomiting, and mixed signs of concussion and compression, followed by death eleven hours after the injury. Dr. Longmore,² who observed this case in the Crimea, found that the longitudinal sinus had been ruptured, and that about four ounces of coagulated blood were pressing on the brain. A spot of contusion, which presented the usual ecchymotic appearances, was seen in each hemisphere of the cerebrum; but the bone was not fractured.

The *symptoms* of this form of compression differ from those occasioned by depressed bone, or the presence of a foreign body, in not being immediate. A man, for example, is struck on the head by a ball or a fragment of shell, and the phenomena of concussion of the brain ensue. In the stage of prostration or shock, the lacerated vessels pour out little or no blood; but as soon as reaction occurs, hemorrhage sets in, and continues until the space caused by the separation of the dura mater from the inner wall of the skull is completely filled. The severity of the symptoms depends, therefore, upon the extent of the secession of the dura mater, and upon the rapidity of the effusion. If the quantity of blood emitted be small,

¹ Demme merely alludes to a laceration of the transverse sinus, with escape of blood from the external ear, from counter-fracture of the base of the skull. There are no details; so that I can make no use of the case.

² A Treatise on Gunshot Wounds, p. 65, Philadelphia, 1863; and Holmes's System of Surgery, vol. ii. 2d ed., p. 161.

and the flow be gradual, the brain accommodates itself to the pressure, by parting with a corresponding amount of its normal fluids, and the symptoms are obscure or not present at all; whereas, if the quantity be large and rapidly effused, the phenomena are sudden and well marked.

As I have already indicated, the symptoms may follow the injury in a few minutes, or be delayed for many hours or even days, the period of their access being proportionate to the duration of the stage of collapse; but they usually appear within half an hour, and are blended with those of concussion. In characteristic cases, however, they soon give way to utter unconsciousness, with full, slow pulse, dilated pupils, retarded, laboured, stertorous, puffing breathing, and paralysis with diminution of temperature of the opposite side, a group of signs that cannot be mistaken. There is scarcely room for doubt as to the true nature of the lesion, when it is remembered that, in concussion, the phenomena are immediate and transient, whereas, in compression, there is a lucid interval between the reception of the injury and the declaration of the symptoms, which, when they have set in, are progressive and increase in intensity.

The phenomena are not always so perspicuous. In exceptional instances, instead of complete insensibility, there is no loss of consciousness, and the hemiplegia is imperfect; and it is a singular fact that consciousness may persist to within a short period before death. In these cases the remaining symptoms are ambiguous. Mr. Hutchinson (*London Hospital Reports*, vol. iv. p. 44) has recorded an interesting example of effusion of nearly three ounces of blood in the sphenoidal fossa, in which partial hemiplegia of the opposite side was manifest six hours after a fall on the head, but had passed off on the following day. Here the pressure appeared to have exerted merely a temporary local effect. In other cases of large extravasations, there is no stertor, the pupils are normal or nearly so, the pulse is rapid, soft, compressible, irregular, or jerking, and paralysis is either absent or incomplete. In these instances of absence of the more prominent symptoms, the diagnosis is aided by the history of the case and by the condition of the pupils and the scalp. Thus, an interval of immunity from symptoms, the presence of a contusion with collateral immovable and dilated pupil, point to effusion under the seat of the injury, the state of the pupil being due to pressure by the clot on the trunk of the third nerve, as exemplified in the case narrated below. Tonic spasm or rigidity of the hemiplegic limbs, if paralysis be present, although other important symptoms are wanting, is, as stated by Dr. Todd (*Clinical Lectures on Paralysis*, etc., p. 222) a valuable confirmatory sign of effusion on the dura mater, and one which I have observed myself.

It is well established that contusion and laceration of the brain may evoke phenomena which cannot be distinguished from those of large extravasations of blood immediately beneath the cranium; but I am satisfied that injury of the brain of sufficient extent to induce coma, stertor, full,

laboured pulse, and dilated pupils, is less common in army than in civil practice. When the stage of collapse after gunshot injury is aggravated and protracted, and merges imperceptibly into that of compression, without there having been an interval of consciousness, and if, in addition, there be great unrest, convulsions, or undue muscular activity, the surgeon may safely conclude that the case is one of contusion and laceration. Hence it will be inferred that, in cases of doubt, a period of lucidity after the reception of an injury, succeeded by the gradual supervention and increase of the signs of compression, is the most reliable symptom of superficial effusion of blood.

The following example of compression from laceration of the middle meningeal artery, came under my observation after the battle of Shiloh, and affords an excellent illustration of the termination of these cases when not interfered with, although in this particular instance trephining at the apparent seat of the trouble would have been useless. It is also highly interesting, first, from the fact of its being an example of indirect fracture, a rare form of injury in field practice; and, secondly, from the anomalous symptoms, and particularly the existence of incomplete hemiplegia on the same side as the extravasation, for which, however, sufficient cause was found on the opposite side of the brain. The pulse was certainly not far from natural as to its rate, although its volume was diminished; the nature of the respiration indicated trouble at the base of the skull; and the fixed and extremely dilated state of the left pupil justified the inference of effusion in the left middle fossa with pressure on the third nerve:—

On the 8th of April, 1862, my attention was called to a young man, who was lying on his back in a tent, in a state of profound stupor. The respiration was slow, stertorous, and of a puffing nature. The pulse was small, feeble, eighty-four; pupils dilated—the left almost to its utmost extent—and completely insensible to light; left side of the body slightly paralyzed, corresponding extremities cold, the foot and hand being livid. The flexor muscles of both arms were contracted; fingers flexed, and thumbs turned inward upon the palms. Upon raising the arms and letting them go, they fell powerless. This was more especially the case with the left limb. The left leg was firmly extended, powerless, and not so sensible to external impressions as the right, which was in the same condition, but to a less degree. A lacerated wound, about an inch in length, was found just below the right parietal eminence; and, upon introducing the finger and making pressure upon the skull, convulsive movements of the trunk and extremities ensued. The sensation imparted to the touch was that of a depressed fracture; but the bone was sound, and the deceptive feeling was due to the manner in which the aponeurosis and periosteum were torn, the latter of these structures being detached for a considerable distance beyond the wound. When the injury was inflicted the man wore a cap, the lining of which was lacerated by the projectile, while its exterior was not damaged.

The previous history of the case, elicited from a companion who accompanied the patient to the rear, a distance of nearly three miles, was that he had been struck by a piece of shell, on the previous day, or about

twenty-four hours before I saw him. He was knocked senseless, but soon recovered, vomited, was obliged to rest frequently on his way to the rear, appeared drowsy, and unwilling to proceed after each stoppage. He made no complaint, and was rational; but was restless during the early part of the night and moaned so much as to disturb his friend, who desired him to keep quiet, which he did, although he made no answer. On the following morning he appeared to be in a deep sleep from which he could not be aroused, on which account my services were requested.

Although the legitimate conclusion was that the compression was due to extravasated blood, the symptoms were too obscure to warrant trephining at the seat of the injury, and nothing was done beyond the application of cold water to the shorn scalp, and the relief of the distended bladder. Life was extinct in five hours, and section disclosed an enormous clot between the left parietal bone and dura mater, extending down into the middle fossa of the skull, and completely filling it up, and pressing upon the trunk of the third nerve at the sphenoidal fissure. There was a linear fracture passing through the spheno-parietal suture, and dividing the canal containing the middle meningeal artery, which was lacerated. On the right side, immediately beneath the contused, but otherwise uninjured, bone, the vessels of the pia mater were enormously distended, the gyral spaces were filled with semifluid blood, and, on slicing the brain, small spots of ecchymosis were present at numerous points, and a clot, the size of a hazel-nut, was seated in its substance, at a spot corresponding with the external injury.

Treatment.—When blood is largely effused in this situation it is very questionable if it is ever absorbed; and, if changes are effected in an extensive clot similar to those of blood-extravasations elsewhere, I have failed, after careful search, to find an example. It is very sure that the patient will die from suppression of the functions of the brain through anæmia, or from secondary meningo-encephalitis, or in consequence of putrid changes in the coagulum, unless the coagulum be removed, while it is equally certain that he may recover if operative measures be resorted to promptly. Thus, examination of the 16 cases, of which brief analyses have been made at a preceding page, that of Mr. Guthrie being excluded, as it was not due to gunshot, shows that in 2, my own, and that of Longmore, nothing was done, and both patients perished; and in 14, all of which, with one exception, were examples of depressed fractures, surgical treatment was instituted, with the following results:—

In 10, the trephine was applied—in one instance four crowns; of these, 3 recovered, and 7 died; while in 4, the elevator and forceps were found adequate to remove the depressed and detached fragments, and of these, 3 recovered, and 1 died; thus affording a total of 14 operations, with 8 deaths, or a proportion of mortality of 57.14 per cent. Now let it be added that all of the cures were examples of primary interference, and we derive the wholesome precept to operate at once. 10 operations were immediate, of which 4 were mortal, while 4 were secondary, and none recovered, trephining having been deferred until the tenth, thirteenth, fourteenth, and nineteenth day respectively; and in all suppurative encephalitis was found

post-mortem. These facts go to show that the conservative treatment of this class of cases is wrong, and that the trephine, and other measures to afford access to the clot, are positively indicated.

In three of the instances of death after immediate operation, dissection disclosed contusion of the brain, and in none did the dura mater regain its level after the clot was removed. In the fourth case, in which twelve fragments of bone and an immense clot were removed, the dura mater remained depressed, and the man did not rally, but a necroscopic examination was not held. These demonstrate, first, that, as in cases which arise in civil practice, the presence of blood on the dura mater from missiles of war is often attended with contusion of the brain, in which event the injury will prove fatal whether the trephine be employed or not; and, secondly, that, when the dura mater does not immediately rise up into the artificial opening after the coagulum has been extracted, the man is very liable to perish, thereby forming a very valuable aid in the prognosis of each individual case after operation.

I cannot ascribe the death of any of these patients to surgical procedures. In the examples of primary trephining, the fatal result was due to the concomitant contusion and laceration of the brain; and, when the operations were secondary, the cause of death was invariably abscess within the substance, or pus on the surface of the brain. Death ensued in the two cases of non-interference; and, judging from the results of immediate operations, at least two of those subjected to secondary trephining might have been saved, had it been performed early. The teachings, therefore, of these cases lead to the conclusion that, when compression of the brain is dependent upon the extravasation of blood between the dura mater and the skull, the latter must be opened, in order that the clot may be turned out; and that, to be of any avail, the operation should be practised at once, since, when stupor, convulsions, and hemiplegia arise, after the case has had time to run through the different stages of inflammation, they are due to irremediable suppurative inflammation of the pia mater and arachnoid, or to abscess of the brain, or to a combination of both of these conditions.

It is highly interesting, moreover, to note that, in seven of these instances, operations were practised for laceration of the anterior branch of the middle meningeal artery, and that only one of them recovered; whereas, in seven cases, the small vessels which passed from the dura mater to the bones gave rise to the extravasation, and five recovered; so that the prognosis of the latter is far more favourable than that of the former condition.

Such, I am convinced, is the proper treatment when the extravasation coexists with compound fracture, with or without depression. It sometimes happens, however, that there is no evidence of fracture, but that the scalp is contused or puffy, and the symptoms of effusion are clear. The stupor and other signs, but particularly the existence of paralysis of

the opposite side of the body, and immovable, dilated pupil on the same side as the injury, point to a clot, and warrant laying open the bruised integuments, and applying the trephine at the corresponding point of the skull. Should fluid blood escape at the opening thus made, as I have twice witnessed in private practice, the surgeon is further justified in removing a disk of bone over the course of the meningeal artery as it lies in the groove in the anterior inferior angle of the parietal bone, so as to secure directly the lacerated vessel. The application of the trephine, at a point situated about an inch above the zygomatic arch, and an equal distance behind the external angular process of the frontal bone, will effect the object.

The correctness of this practice is attested by a few cases of recovery from such injuries, other than those inflicted by weapons of war.

Dr. Hennen, for example, has narrated the case of a soldier who was confined in the guard-room at Versailles, under the supposition that he was intoxicated; but the symptoms of compression steadily progressed, and the entire scalp became puffy and cedematous. On the fourth day something like irregularity was detected at the upper and anterior part of the right parietal bone. Incision at this point indicated neither fissure nor fracture; but six crowns of the trephine, none of which, however, included a perfect circle, were applied, and an enormous clot was removed. The operation was followed by great relief; the resulting suppuration was copious; and the man was cured. (*Op. cit.*, Case XLIX.)

The results of surgical interference in this group of injuries show conclusively that it is unfair to compare cases in field practice, as regards the final issue, with those met with in civil life. In the latter an exceedingly lethal complication is nearly always present, to such an extent, indeed, that Mr. Hewett says:—

“The post-mortem records of St. George’s Hospital show that within the last few years there have been twenty-five cases of large extravasations of blood between the bone and dura mater, in all of which the brain was more or less extensively lacerated. Injuries of such a compound nature easily explain the difficulties as to diagnosis, and the reason why the trephine is so seldom applied nowadays for extravasated blood; and why, also, when resorted to, the operation so seldom succeeds.” (*Holmes’s System of Surgery*, vol. ii., 2d ed., p. 258.) Mr. Callender (*St. Bartholomew’s Hospital Reports*, vol. iii. p. 429) confirms these observations, and Mr. Hutchinson writes, “It is a remarkable fact that the annals of modern surgery do not, so far as I am aware, contain any cases in which life has been saved by trephining for this sort of things.” (*Op. cit.*, p. 51.)

If a comparison be instituted between the cases which I have analyzed and those referred to by Mr. Hewett, the inference is clear that extensive contusion and laceration of the brain is less common, as a complication of effusion on the dura mater, from projectiles of war than from the causes met with in civil hospitals. Serious concomitant lesion of the brain is shown by post-mortem inspection to attend injury by balls or fragments of shell less frequently than blows or falls from a height upon the head, in the latter of which the force is diffused, and not circumscribed as in the case of injury by missiles. The results of operative interference tend also

to the same conclusion, since extensive lesion of the brain could scarcely have existed in the instances of recovery which comprise nearly one-half of all the cases that I have cited.

Extravasation of blood into the *arachnoid sac* coexists with nearly all of the severe contusions of the cortex of the brain, when it is due to laceration of the vessels of the pia mater, with simultaneous rent of the visceral arachnoid. It is also occasioned by rupture of the superficial cerebral veins or of the great sinuses, or it may depend upon wound of the dura mater, and coexist with effusion on that membrane. The blood may be converted into a false membrane, or become inclosed in a distinct cyst, and the man recover; but when a cyst has formed, it is liable to be followed by epilepsy or insanity. Mr. Hewett¹ quotes the case reported by Dr. Quain, in which the former affection was thus occasioned; and also refers to those narrated by Fisher, Foville, and Blandin, the two latter occurring in old soldiers, in which severe blows upon the head induced insanity; and dissection many years afterwards disclosed large encysted collections of blood in the cavity of the arachnoid. In cases of "general paralysis of the insane" blood cysts have been met with five times by Calmeil, and once by Dr. Ogle. (*Brit. and For. Chir. Rev.*, vol. 36, p. 224.)

The symptoms of this accident vary in intensity. In some cases, as that of Legouest, referred to below, there is no evidence whatever of cerebral disturbance, and even when the effusion is very considerable, provided it be diffused or spread over both hemispheres, the phenomena are vague and masked by those of laceration and contusion of the brain. Da Costa (*Medical Diagnosis*, p. 127, Phila. 1870) says that extravasations, limited to the arachnoid cavity and subarachnoid spaces, "occasion ordinarily pain in the head, somnolency, and profound coma with paralysis, and without anæsthesia or slow pulse, but with relaxation of the muscles, and sometimes with convulsions." When, on the other hand, the fluid is more circumscribed, or the compression is limited to one cerebral hemisphere, the symptoms are decided; but they are identical with those produced by effusion between the bone and dura mater from injury to the middle meningeal artery. In both conditions there are more or less marked coma, dilated pupils, slow, full, or laboured pulse, hemiplegia with diminution of the temperature of the opposite limbs, and slow, noisy, or stertorous respiration. In the majority of instances, after the immediate symptoms of shock have passed off, there is a lucid interval before unconsciousness sets in; while in others absolute insensibility exists from the very outset. In these latter cases, the symptoms point to more extensive laceration or contusion of the brain itself; and I

¹ To any one who may be desirous to investigate this subject, may be recommended, as containing all that is of value, the paper "On the Extravasation of Blood into the Cavity of the Arachnoid," *Med. Chir. Trans. of London*, vol. 28; and the able essay on "Injuries of the Head," in *Holmes's System of Surgery*, by this writer.

believe I am right in asserting that in them the pulse is rapid, small, or feeble, rather than slow, full, or laboured, while the breathing is at most noisy and unaccompanied by stertor. The differential diagnosis of subcranial and intra-arachnoid extravasation is, so far as I am aware, impossible; but an analysis of recorded cases leads me to confirm the observation of Mr. Hutchinson (*Op. cit.*, p. 53) that the marked inequality in the size of the pupils is rarely present in the latter, and that the hemiplegia is not so decided.

The *prognosis* of effusion in this situation is unfavourable in the extreme. The dead-house of civil hospitals shows, now and then, that considerable collections have undergone the various transformations usual to sanguineous extravasations elsewhere, and that the injuries of the head had been survived for many years. The case, moreover, of Legouest (*Traité de Chirurgie D'Armée*, p. 311, Paris, 1863) indicates that absorption of the blood was slowly progressing in an injury by gunshot. A soldier was struck at Solferino, June, 1859, by a ball which contused the external angular process of the frontal bone, and died of a foreign affection in January, 1862, when a spoonful of a yellowish and pulpy false membrane was found beneath the dura mater, which had compressed, and produced atrophy of the anterior lobe of the brain, without having occasioned the least functional disturbance.

Treatment.—I am not aware that collections of blood in the arachnoid sac have ever been recognized during life so as to call for the application of the trephine, with a view to their evacuation. Examples have, however, occurred in which the symptoms of compression were decided; and, in these rare cases, a circle of bone has been removed, under the supposition that the blood was seated between the skull and dura mater; but the condition of that membrane pointed to the existence of effusion beneath it. Under these circumstances, it rises at once into the hole made by the trephine; presents a bluish appearance, and is devoid of the natural pulsation which it always possesses when its normal relations with the brain are not changed. Shall the tumour be opened? I answer, yes. The opponents of the operation urge that there is danger of protrusion, or so-called hernia of the brain; and, above all, that the admission of air to the contused and lacerated brain and its envelopes may excite general meningitis, or dissolution of the cerebral tissues, intermixed, as they are, with clots of blood. These objections may be valid; but it remains to be shown that the patient ever does recover, when the amount of blood is so large as to induce marked symptoms of compression, without its being evacuated. On the other hand, the reports of several cases, where this procedure was practised, and the patients saved, show that an incision into the bulging dura mater is absolutely called for. Thus, a grenadier was struck on the temple by a fragment of a shell, which rendered him senseless, and produced effusion under the scalp. He soon recovered, but

shortly afterwards fell into a condition of stupor, for which venesection and trephining were resorted to. There was no fracture, nor was there extravasation on the dura mater. In a few hours he began to talk, answered questions rationally, and took nourishment; but he soon sunk into his former condition. On removing the dressings the dura mater was seen to form a non-pulsating swelling in the artificial opening. A crucial incision gave vent to two tablespoonfuls of half-fluid and half-clotted blood, and complete consciousness was restored in two hours.¹ Equally happy results after blows or falls upon the head have been obtained in civil practice by Morand,² Hecker,³ Bremond,⁴ Ricker,⁵ Ogle,⁶ and Chevalier.⁷

Infiltration of blood, *on the surface of the brain*, in the meshes of the pia mater, usually coexists with laceration of the brain, caps the hemispheres, and induces no distinctive signs. "The patients lie comatose and give no evidence of partial paralysis."⁸ This state of affairs is irremediable. Extravasations into the *substance of the brain* are nothing more nor less than examples of traumatic apoplexy, and must be treated as such by general measures, since they are not accessible to the knife. They invariably coexist with contusion and laceration of the tissues of the brain, and are generally rapidly fatal, although not always so, even when the effusion is considerable. The case of Nagle (*Med. and Surg. Hist. of the British Army in the Crimea*, vol. ii., p. 287) affords a good illustration of the gradual absorption of a clot, which was as large as a walnut, and seated in the vicinity of the optic lobes. Had the man not indulged in liquor, there is every probability that he would have outlived the injury.

On reviewing the entire subject of compression from extravasated blood, I hope to have made it sufficiently clear that the fluid, when accessible, should be evacuated. But the important question arises in connection with operation, *can the seat of the effusion be clearly determined?* These cases are often of the most puzzling nature, and every surgeon has met with instances in which he was convinced that life was threatened by an extensive clot, but was deterred from trephining on account of their obscurity. If it were true that certain functional disorders are due to lesion of particular parts of the encephalon, they would exert great influence on the question of surgical interference; hence attempts have been made at various times so to fix the connection between special symptoms and definite extravasations of blood into the substance of the brain that their situation could be arrived at with some degree of certainty. Thus pathological research has demonstrated that effusion limited to one corpus

¹ Petit, *Traité des Maladies Chirurgicales*, ii. p. 88, Paris 1790.

² *Opuscles de Chirurgie*, P. I., p. 171, Paris, 1768.

³ Bruns, *Handbuch der Praktischen Chirurgie*, Abth. I., p. 931.

⁴ *Ibid.*, p. 933.

⁵ *Ibid.*, p. 905.

⁶ Brodie, *Med. Chir. Trans.*, vol. xiv., part ii., p. 391.

⁷ *Ibid.*

⁸ Callender, *op. cit.*, *St. Bartholomew's Hosp. Rep.*, vol. v. p. 36.

striatum or thalamus opticus produces opposite motor, and more or less sensory, paralysis; but so, also, does a clot in the crus cerebri, the cerebellum, and the pons Varolli, while extravasation on the dura mater, or in the arachnoid sac, has the same effect. In the case of the large central ganglia, or the pons, persistence of consciousness is regarded of importance as a distinctive feature, but there may be hemiplegia without loss of consciousness when the blood is seated on or between the membranes. More or less complete unconsciousness, hemiplegia, and paralysis of the third nerve are present in hemorrhage into the pons, but a clot on the dura mater or in the arachnoid sac may equally produce paralysis of both hemispheres, hemiplegia, and palsy of the motor oculi. Paralysis of parts supplied by the nerves which proceed from the base of the brain may depend upon lesion of the nuclei at their origin, or simply upon compression of their trunks outside of the brain proper. The fact is that, although a coagulum may have a purely local effect, in the majority of instances it finally influences or disorders, perhaps through secondary paresis, other portions of the brain, thereby interfering with a multitude of functions. In what other way can the loss of consciousness from lesion of the pons Varolii be accounted for? This interdependence of the cerebral nervous centres, or liability of an injury in one to occasion disorder in others, is due to their commissural connections, and is made the text of a series of highly instructive papers by Mr. C. Hanfield Jones (*Medical Times and Gazette*, vol. i., 1872, pp. 593, 653, and 680), who, while he does not question the established doctrine that pressure when considerable is an efficient cause of coma and general paralysis, thinks that too much has been made of this agent, and that the secondary or induced derangements, which may be more prominent than the disorder resulting from the original injury, and which frequently occasion death by arresting the action of the heart or lungs, are really due to irritation.

Since other functions than that of the part affected are interfered with in cases of effusion, it appears to me useless to attempt to localize clots merely by disturbances of functions of individual nervous centres. The determination of the differential diagnosis or the question of operation can scarcely be aided by special symptoms. Aphasia even may be due to a clot beneath the bone pressing on the frontal lobe and the third convolution, as in a case of rupture of a branch of the middle meningeal artery, from stellate fracture of the parietal bone, associated with right-sided hemiplegia, but with retention of consciousness, reported by Malichecq and quoted by Professor Lohmeyer (*Langenbeck's Archiv*, vol. xiii., 1872, p. 309). Aphasia, however, is a sufficient cause for refraining from operation, as it depends, in the great majority of instances, on deeply-seated trouble of the left side of the brain, particularly the third frontal convolution or some part of the corpus striatum. These structures are usually damaged by direct contusion or laceration, and, although effusion

in their immediate neighbourhood may exercise an inhibitory influence upon them, I do not find that the motor ganglia of speech are ever paralyzed by extravasation on the dura mater or in the sac of the arachnoid, unless the blood has trickled down into the anterior cranial fossa and compressed the base of the anterior lobe. In a case of this kind a surgeon would scarcely think of attempting to remove the clot. If not absolutely impracticable, the operation would at least be highly embarrassing and difficult.

2. COMPRESSION FROM EFFUSION OF PUS.—The formation of pus within the cavity of the cranium is by far the most frequent source of compression of the brain, not less than six-tenths of all cases being due to it. Thus, an analysis of 100 examples of cerebral compression shows that 40 depend upon depressed bone and extravasated blood, and 60 upon effusion of pus; of which 3, or 5 per cent., are instances of matter between the bone and dura mater; 15, or 25 per cent., of suppurative meningitis; and 42, or 70 per cent., of abscess of the brain-substance. Such is the proportion which these lesions bear to each other from an examination of upwards of two hundred cases.

It is thus to be perceived that matter may form in the same situations as extravasations of blood, but it is not easy to determine by which of these separate conditions the symptoms are induced. They are so often combined that it is rare to find pus on the surface of the brain without coexisting abscess of its substance, or matter on the dura mater without diffuse suppuration of the arachnoid or inflammation of a sinus. It is for these reasons that this group of cases is attended with so high a mortality, and also that the symptoms are so variously intermixed.

But the case may run its course without there being any marked indications of serious mischief, as it is not very uncommon for a pretty extensive abscess of a lobe, or even entire hemisphere, to awaken no symptoms of compression until the patient is on the very verge of dissolution. Pirogoff (*Grundzüge der Allgemeinen Kriegschirurgie*) alludes to a singular illustration of this fact, that was the subject of widely different opinions, none of which, however, were correct.

The man was perfectly conscious, suffered from no particular cerebral symptoms, but, whenever he assumed the upright posture or sat up in his bed, he was attacked with violent vomiting. This state of things continued for weeks, until he fell into sudden stupor, and died shortly afterwards. Dissection disclosed an abscess of the middle lobe as large as a hen's egg. The same is true of suppurative meningitis. Jos. R., 151st New York Vols., was struck by a ball which inflicted a scalp-wound and contused the bone. He did well until the seventeenth day, when sudden convulsions and coma set in, for which five crowns of the trephine were applied by Surgeon Smith, with the effect of evacuating some matter from between the bone and dura mater. The convulsions ceased, but the stupor continued, and death ensued in twelve hours, when diffuse inflammation of the dura mater and arachnoid were discovered. (*Circ. No. 6, S. G. O., p. 10.*)

Whatever may be the situation of the pus it induces symptoms which

are common to all, although they vary in number and intensity. At first the man suffers from headache; is intolerant of light and noise; pulse quick and hard; skin hot and dry; pupils contracted; tongue coated; appetite impaired; and nausea and vomiting are frequent. As the inflammation advances these symptoms increase, until rigors, alternating with flushes of heat; fever of a remittent type; feeble, irregular pulse; anxious and haggard expression of countenance, which is pallid, or of a yellowish tint; delirium, sopor, paralysis, and coma terminate the case. Dilatation of the pupils and slow pulse are, as a rule, only observed when the patient lies in a state of deep sopor. It is important to bear in mind that pus formations, when the skull is not opened, very rarely declare themselves before the sixth day after the injury, for the simple reason that traumatic encephalitis usually appears about the fifth day, although it may arise sooner, and has to run through its different stages before the suppurative crisis is reached.

It becomes a very important question in connection with operations to determine the *seat* of the pus, whether it is located between the skull and dura mater, between the membranes, or in the substance of the brain, but it is often very difficult to decide this point, particularly if patients are brought to the hospital in a state of insensibility. When, however, the man has been under the immediate eye of the surgeon from the date of the injury, thus affording him an opportunity to watch its progress and various phases, there will usually be no trouble in this regard, and there would be none whatever did these different lesions always exist as independent affections. I have studied this subject patiently and carefully, both at the bedside and by attentively examining and comparing numerous cases that have occurred in different campaigns, and have come to the conclusion that, although positive signs by which the differential diagnosis of the seat of the trouble is rendered certain cannot be enumerated, yet the period at which the symptoms set in after the injury, taken in connection with other phenomena, is of the utmost value in determining the true nature of the case. The following are the results at which I have arrived, and I would not hesitate to say which was the prominent affection, for they may all be combined, and base my diagnosis upon the subjoined groups of symptoms in any and all cases. My somewhat positive statements, it must be remembered, are founded upon non-penetrating injuries, and it is possible that a more extended experience may demonstrate that they are not altogether reliable. When there is an injury with free communication with the contents of the skull, suppuration sets in, of course, more rapidly.

Pus between the dura mater and the skull.—The symptoms never appear before the sixth day; rarely before the eleventh; and usually prior to the expiration of the second week, the average being the thir-

teenth day.¹ There is some apparent reason for the local collection, as a contused or lacerated scalp, with or without fissure or slight depression of the bone, or the death of the exposed and contused skull. When the scalp is merely bruised, a painful, circumscribed, puffy tumour, with distinct fluctuation, forms at the site of the injury. Incision into this denotes the separation of the pericranium from the skull by sanious pus; and, if the bone be necrosed, there can be little doubt that its inner table is also dead, and the dura mater covered to a limited extent with pus or dirty lymph, or ulcerated, or even gangrenous. When there is an open wound, it assumes an unhealthy appearance; its edges are swollen; the granulations are pale, and wither, and their discharge becomes scanty, acrid, and thin. The pericranium secedes, and the exposed bone is seen to be dry, discoloured, or dead, thus affording a pretty sure index of the condition of its inner surface and of the dura mater, in which simultaneous changes have been going on.

The symptoms which accompany these local alterations are not so well-marked as when the matter is more deeply seated. The patient is feverish; has frequent rigors, nausea, and fixed and gradually increasing headache; is drowsy and stupid; the memory is impaired; and there are occasional attacks of mild delirium. He lies quiet, or semicomatose; his sensibility, both special and general, is lowered, but not destroyed; pressure upon the wound will cause him to moan and carry his hands to his head; muscular spasms and paralysis are not so decided as in the more deeply-seated suppurations, if, indeed, they exist at all; somnolency is sometimes interrupted by convulsive movements; but hemiplegia is rarely to be looked for, spasmodic contractions and distortions of the facial muscles being more common. In a word, the state of the wound, the fixed headache, the partial stupor, and incomplete paralysis, are indicative of suppurative pachymeningitis.

Suppurative meningitis.—Inflammation of the dura mater may be communicated by contiguity of surface to the parietal arachnoid, and the cavity of the latter membrane become occupied with fibrinous or serous pus; and from the arachnoid, the morbid action may spread to the pia mater, the meshes of which are infiltrated with a sero-purulent fluid; or the inflammation of the latter structure may depend upon the extension of the inflammation to it from a lacerated or contused brain. In the latter case, the changes in the wound of the scalp do not necessarily ensue; but in the former, or when the arachnoid becomes affected through

¹ These data correspond very closely to those deduced from civil practice by Mr. Dease. He says, "I have seldom seen them—the symptoms—appear earlier than the eighth day, or later than the sixteenth or seventeenth; between the eighth and the sixteenth being in general the period most to be dreaded."—*Observations on Wounds of the Head*, etc. Dublin, 1760.

the dura mater, the soft parts and bone present the same appearances as in the case of pus seated immediately beneath the bone.

The symptoms of suppuration of the membranes never appear before the eighth day; are rarely delayed beyond the twenty-first; the average being the thirteenth day. The cephalalgia is general, intense, and of an excruciating nature; there are obstinate constipation and vomiting; the sensibility of the nerves of special sense is greatly exaggerated, as evinced by the excessive intolerance of light and sound; the pupils are contracted; the pulse is very frequent; the delirium is active, and often maniacal; and, as the disease progresses, general convulsions set in, which are followed by paralysis, with anæsthesia, dilated pupils, retarded pulse, and profound coma, all of which succeed each other more rapidly than in the former condition, and less rapidly than when there is an abscess of the brain. Dr. Todd says that rigidity of the muscles of the paralyzed limbs from the commencement of or soon after the attack is characteristic of purulent arachnitis or accumulations of matter in the subarachnoid space.¹ Confirmatory evidence of this statement is afforded by a case, observed by Dr. H. Fischer, of Berlin, of purulent arachnitis after fracture with depression of the right parietal bone, which had occasioned, in addition to other symptoms, paralysis and tonic spasm of the muscles of the left arm;² and by a case of gunshot contusion, without fracture, of the left parietal bone, recorded by Dr. John Ashhurst, Jr.,³ in which two or three slight convulsions, with sopor, occurred on the seventeenth day, and were followed by delirium, coma, and, on the day preceding death, spasmodic contraction of the muscles of the left side of the body. The arachnoid over the middle right lobe was acutely inflamed, presenting an abundant deposit of soft lymph, while the membrane of the left side was free. The brain beneath the necrosed bone was softened, and contained a small abscess about three-fourths of an inch from its surface.

The most reliable symptom of unilateral arachnitis is opposite hemiplegia,⁴ succeeding rigors, intense headache, elevation of temperature, vomiting, delirium, stupor, and convulsions, and followed by coma. The presence of Pott's "puffy tumour" of the scalp renders the operative prognosis more favourable than its absence, since it points rather to a

¹ Op. cit., p. 224.

² Langenbeck's Archiv, vol. vi. p. 605. 1865.

³ Amer. Journ. Med. Sciences, vol. l. N. S. p. 388.

⁴ Unilateral arachnitis does not invariably produce opposite hemiplegia, but the importance of this symptom has been recognized by Dr. Wilks and Mr. Jonathan Hutchinson. In the paper, already referred to, at p. 53, the latter asserts that hemiplegia is the usual indication of arachnitis; and I am pleased to find that his conclusions, although deduced from civil practice, coincide with my own as to the fact of arachnitis being a more common result of fracture or contusion of the cranial bones, than the formation of pus between the skull and dura mater.

limited inflammation, or circumscribed collection of pus in the arachnoid sac; while its absence is indicative of diffused inflammation or sub-arachnoid effusion, due, probably, to primary lesion—contusion—of the central ganglia, or laceration of the cortex of the brain.

Abscess of the brain.—The symptoms never appear before the thirteenth day, and are most frequent between the fifteenth and twenty-seventh days, the average being the twenty-fifth. The cephalalgia is sudden in development, and of a dull, heavy nature, although it may be present from the commencement, and be intense when the exterior gray matter is involved; the special senses are suddenly perverted; the delirium is of a quiet character; sopor; one-sided convulsions, incomplete hemiplegia, and coma succeed each other more rapidly and more constantly than in the other forms of pus-effusion. The stupor is complete; the man seldom lies with his limbs outstretched, but he is curled up, so to speak, in his bed; general sensibility is utterly abolished, so that pressure on the external wound does not cause him to bring his hands to his head, although there may be automatic movements. In a word, profound coma, and total destruction of special and general sensation are characteristic of this condition. When the abscess bursts into a lateral ventricle, it is usually rapidly fatal.

The *treatment* of compression of the brain from effusion of pus is purely surgical; and all authors are unanimous in the opinion that, unless the matter be evacuated, the patient will die, although they are equally agreed that this measure holds out but little chance for life. Since pus is liable to be situated in several distinct localities, I shall consider the management of compression from this cause according to the position of the foreign formation, and illustrate the topic by a few practical cases.

When pus is seated *between the dura mater and the skull*, it is usually due to contusion of these structures by gunshot; but suppurative inflammation of the dura mater, which is the primary and principal element in the pus production, not the inflammation of the bone, as is taught by some surgeons, is often excited by the pressure of a sharp fragment of bone, a ball, or other foreign body, which proves a constant source of irritation. In these latter cases, it is obvious that the foreign substance, if recognized, should be removed; so that I shall confine my remarks to those cases in which there is no penetrating fracture or obvious presence of a foreign substance.

Very fortunately, suppurative inflammation of the dura mater is less common at the present day than it was several generations ago; at any rate, it is not often met with as a result of gunshot contusion of the bone and membrane, so as to call for the operation of trephining. When it is, experience has shown that its early evacuation is positively called for. Mr. Pott, *Injuries of the Head*, London, 1768, was remarkably successful in his operations, not less than five out of eight cases having recovered. In all of these, the inflammation of the dura

mater was coincident with contusion and death of the bone without fracture, and the trephine was resorted to when the inflammation was circumscribed, or before it had extended to the subjacent arachnoid. This alone is the secret of the great success which attended the procedure in the hands of the eminent British surgeon. If at the first operation little pus was found, and the symptoms increased, the instrument was again applied and a free escape for the fluid thus secured.

At the present day, however, recovery from operation is not so common. A recent writer remarks that he has repeatedly seen the matter evacuated by the trephine without benefit; but he inculcates the doctrine "to operate only where, in addition to fever and rigors, and to the local signs about the bone, there are also well-marked brain symptoms, coma, and, better still, hemiplegia." Now if the surgeon waits until these symptoms set in, the chances of a successful issue are reduced to a minimum, since they depend upon arachnitis or abscess of the brain. One need not wonder, therefore, that recoveries are unknown under these circumstances, although we must do the writer the justice to say that he advises opening the skull as the only chance left. Mr. Pott did not wait for these fatal symptoms. For him, a slight blow upon the head, followed by the formation of pus between the pericranium and bone, pain, restlessness, languor, febrile action, slight rigors, cephalalgia, and quick pulse, were sufficient indications that the dura mater was seriously involved, and that the pus should be let out. I have examined the histories of the cases that have occurred in late wars; their symptoms do not differ from those presented by cases a century back; the only difference, in my opinion, being that Mr. Pott was right in his treatment, and that modern surgeons are very decidedly wrong in delaying operative interference until it is too late to be of any avail.

I have never met with compression of the brain from the presence of pus in this situation, although I have had thirteen examples of more or less extensive necrosis of one or both tables of the contused skull, brief descriptions of which are appended in the foot note.¹ I am obliged, there-

¹ In 9 of these cases there was exfoliation of the outer table alone, the lesion being mere contusion in 3; contusion with simple fissure or grooving in 3; contusion with impression in 1; and fissure with slight depression of the inner table in 2. The period of separation varied from 12 to 132 days, the average being 42 days. In 4 instances portions of both tables came away, and in 2 there was concomitant fissure. In one of these the external table had a portion scooped out and exfoliated before the larger and deeper piece was loose. The period of separation varied from one to three months, the average being the 59th day. In one instance I extracted a portion of the parietal bone as large as the palm of the hand on the 93d day after the injury, and the pus could be seen to issue from the fissure at each pulsation of the brain. In 4 cases there were signs of slight contusion of the brain before I saw the patients, as denoted, in the first, by partial paralysis of motion and sensation of the opposite arm for one week; in the

fore, to look elsewhere for illustrations of the advantages of early over late operation, and the results of simple antiphlogistic treatment; and I risk the accusation of dwelling at unnecessary length on this subject, because some writers state that opening the skull is not proper, even if the presence of pus can be pretty clearly determined, since the lesion is necessarily fatal. Examples of compression from abscess of the dura mater, moreover, are not so readily found in the reports of campaigns, that abstracts of cases will not prove practically interesting to the younger members of the profession.

John E., aged 25, on the 16th April, received three small lacerated wounds on the left side of the head from the explosion of a magazine. The wounds had healed, and he was apparently well, when, on the 14th and 15th of May, he remained in bed, being drowsy, stupid-looking, and complaining of violent cephalalgia. On the following day, he lay in a state of partial coma, with the lids half closed, but was sensible when aroused, and answered questions in monosyllables. The skin was hot, the pulse quick and hard, the brows knit, the right side of the face distorted, and the angle of the mouth drawn downwards, while the headache was more severe. There was a small swelling with distinct fluctuation at one of the wounds, which presented the characteristic features of Pott's puffy tumour. On incising this, the pericranium was found separated from the depressed parietal bone by sanious pus. Several portions of the bone were removed with Hey's saw, and others were elevated. The dura mater was inflamed, and coated with pus, but was entire. The symptoms gradually disappeared, and the man was discharged to England on the 5th of July. (*Med. and Surg. Hist. of the British Army in the Crimea*, vol. ii. p. 294.)

In this instance, which is an excellent illustration of the correctness of Pott's views as to trephining for this state of things, life was preserved by timely interference. Had the operation been delayed for a short time, the quantity of matter would have increased; the morbid action have extended more deeply; convulsions, hemiplegia, and coma set in; and death ensued. But primary operation is not always marked by so happy a termination.

Thus, in the case of Hancock (*ibid.*, p. 296), of the 21st Regiment, pus was evacuated from beneath the depressed bone by the trephine, as soon as symptoms had set in, with temporary relief; but death occurred on the eighth day after operation from arachnitis and abscess of the brain. In the case of Scribbins (*ibid.*, p. 296), which was one of fissure of the external table with depression of the internal, jaundice and fever were pronounced on the third day after trephining, and life was extinct five days later. Section disclosed pus on the surface of the brain, and a large abscess in the corresponding hemisphere.

The following successful example of early interference from the practice of Dr. P. H. Watson (*Edinburgh Medical Journal*, July, 1870, p. 43), in the Crimea, also illustrates an interesting diagnostic feature.

Rigors, headache, flushed face, slow pulse, somnolency, and delirium occurred some weeks after what was supposed to be merely a scalp injury. "On laying open the wound to examine the skull at one point where the bone was

second by anæsthesia of all the limbs for several days, which persisted in one leg for three weeks; in the third, the symptoms were almost precisely similar, while, in the fourth, there was convergent strabismus of both eyes for four months, when I lost sight of the man.

bare, a smooth tuft of hair like a hair-pencil stuck right up from the surface, being held and wedged in that position by a minute fissure of the bone, which was so close that, but for the tuft of hair, it could not be recognized." The application of the trephine evacuated an abscess, and disclosed a thin flake of lead, which had been shaved off the passing ball, lying on the dura mater.

The pus may be let out without a resort to the trephine.

An officer, whose case is reported by Görcke, was struck by a musket ball, which caused a depressed fracture of the parietal bone. The alarming symptoms, which arose on the tenth day, ceased on evacuating a quantity of pus by breaking off a portion of the contused bone by means of the point of a pair of forceps inserted into the fissure at one side of the depression. Recovery was complete. (*Rust's Magazin*, Bd. xv. p. 347.)

When coma, convulsions, or hemiplegia are lighted up, the operative prognosis is decidedly unfavourable, since these symptoms indicate abscess of the brain or arachnitis, as in the succeeding illustrations.

An officer of the 47th Regiment received a gunshot fissured fracture of the skull without depression. In spite of active treatment, signs of inflammation of the meninges occurred, followed at the end of about three weeks by coma. The trephine let out a considerable quantity of pus from beneath the bone, the dura mater being uninjured. Immediate relief ensued, and almost complete consciousness was restored. Stupor, however, gradually reappeared, followed by epileptiform convulsions, and death in five weeks from cerebral abscess. (*Med. and Surg. History of British Army in the Crimea*, vol. ii. p. 289.)

A private of the 151st New York Volunteers had apparently recovered from a gunshot wound of the scalp, inflicted Nov. 17, 1863, when, at the expiration of twenty-eight days, he was suddenly seized with convulsions, which were succeeded by coma. Surgeon D. P. Smith removed five circles of the inflamed and contused bone, thereby affording free vent to matter immediately beneath it. Convulsions did not recur; but the coma continued, and the case terminated fatally in twelve hours. Diffuse inflammation of the dura mater and arachnoid were present. (*Circular No. 6*, S. G. O., p. 10.)

A young man was struck on the occipital region by a ball, which inflicted a scalp wound. There were no special symptoms for a fortnight, when unrest, ptosis, and partial one-sided paralysis of motion and sensation were observed. Trephining at the seat of the injury was delayed until ten days later, when a large amount of pus was evacuated, and a detached portion of the inner table of the skull lying on the dura mater was removed. Temporary improvement followed; but the man died on the sixth day. The arachnoid sac was filled with pus and false membrane, and the brain was softened below the seat of the lesion. (*Denonvilliers, Compendium de Chirurgie Pratique*, t. ii. p. 573.)

Finally, when pus has formed on the dura mater, and nothing is done in the way of operative interference, the case is hopeless. The subjoined example shows the most frequent source of death, where the bone is merely contused and matter is seated beneath it. It is taken from Stromeyer (*Maximen der Kriegsheilkunst*, 2d ed. p. 334), and, unless I greatly mistake, the early removal of a disk of bone might have preserved life, while the antiphlogistic treatment hurried on the fatal issue from pyæmia.

On the 7th of April, 1849, a young soldier received a grazing gunshot wound of the scalp, which laid bare, but did not lacerate the pericranium. For ten days he progressed well, when he lost his appetite, felt nauseated, was feverish, and suffered from frontal headache. The wound, however, retained its healthy appearance, and his attendant mistook these symptoms for gastric disturbance. Stromeyer saw the man on the 22d, when the wound presented the usual changes; he had suffered from vomiting; was very restless; anxious, and

wakeful; and the countenance had become haggard. Purulent meningitis was diagnosed, ice and large numbers of leeches were applied to the head; and calomel and mercurial inunctions were rapidly pushed. On the same evening, delirium and coma supervened; on the following morning, he had a severe chill; and twenty-four hours later, death terminated the case. Dissection revealed the pericranium and dura mater separated from the contused bone by pus, clots of blood, and matter in the longitudinal sinus, and purulent exudation over both hemispheres of the brain.

In a second case, observed by Dr. B. Beck (*Die Schusswunden*, p. 99, and *Langenbeck's Archiv*, vol. ii. p. 547), at the battle of Vincenza, a gunshot wound of the scalp, without apparent injury of the parietal bone, gave rise to immediate symptoms of compression. Through energetic antiphlogistic treatment for four days the signs of cerebral irritation diminished, but they afterwards increased and carried off the patient. The external table of the bone was fissured, while the internal was broken, four pointed spicules pressing on the dura mater, which was covered with pus. A circumscribed portion of the brain was also softened. Trephining would probably have been successful here, but the instruments were not at hand.

Such are the histories of primary and secondary operations, and purely antiphlogistic or expectant treatment in this class of cases. They demonstrate that, when the trephine is applied early, the man may be saved; if it be applied late, there is little chance of success; and, if it be withheld altogether, death is the inevitable result. In addition to the instances already quoted of evacuation of pus beneath the cranium, I have to add two successful cases of trephining, one in the Italian war of 1859, reported by Demme (*Militär-Chirurgische Studien in der Italianischen Lazarethen von 1869*, abth. ii. p. 74), the other in the Bohemian campaign of 1866, recorded by Kocher (*Beobachtungen in der Lazarethen der Main-Armee des Feldzuges von 1866*), and a fatal issue narrated by Appia (*The Ambulance Surgeon*, Edinburgh, 1862, p. 171). These comprise all the cases of which I have any knowledge; so that 11 operations afford 5 recoveries, or a proportion of 45 per cent. Larrey's case, referred to hereafter, is one of cure after trephining for the removal of a ball and a quantity of pus seated on the dura mater; but he also describes an instance of pus forming beneath the skull in consequence of a superficial cut by sabre, in which excision of a circle of bone afforded temporary relief, but death ensued from pyæmia. (*Campaigns*, Amer. ed. p. 144.) These additional cases influence only very slightly the rates of recovery; while the results of all cases show that the opinion of those surgeons who hold that operative interference is futile is incorrect, and that, however true it may be that recovery is the exception in civil practice, trephining for gunshot injury compares favourably with other recognized excisions.

In civil cases, it is asserted that the effusion on the dura mater coexists with arachnitis: hence surgeons are almost unanimous in the opinion that a successful issue after its evacuation is scarcely known at the present day. It is interesting, therefore, to refer to the case of a student who was struck on the head with a hammer. For three weeks he suffered from severe headache, when insomnia set in. Examination disclosed a wound

through the skull, and a probe came in contact with a piece of loose bare bone. On the removal of this by Dr. P. H. Watson pent-up matter was discharged. (*Edinburgh Med. Journ.*, July 1870, p. 44.) Allusion may here be made to a rare example of prolonged collection of pus beneath the cranium, recorded by Professor N. R. Smith. It was one of exfoliation of a portion of the parietal bone after a blow from a stone, followed by a fistulous opening, smaller than a quill, and surrounded by granulations which never closed for twenty years. Whenever the flow was impeded, pain and vertigo were occasioned. The trephine evacuated upwards of three ounces of fluid. (*Baltimore Med. Journ.*, Dec. 1870.)

Effusion of pus into the *arachnoid sac* is indicated by the immediate rising of the dura mater, which has lost its pinkish, silvery hue, into the hole made by the trephine, where it forms a tense swelling that is devoid of pulsation. Attention has recently been called to this absence of pulsation, as something novel, by Professor Roser (*Archiv der Heilkunde*, Heft 6), but this phenomenon has for years been a recognized and characteristic symptom of accumulation of pus beneath the dura mater; and was long since prominently insisted upon by Mr. Guthrie. (*Op. cit.*, p. 366.)

This bulging of the dura mater may be regarded as a favourable sign, since it denotes that, instead of the matter being diffused over the surface of the brain, it is collected into circumscribed abscess, through adhesion of the parietal and visceral layers of the arachnoid at the limits of the effusion. In the former event, there is no hope; in the latter, life may be saved by freely incising the swelling, and giving vent to the pent-up matter. Upwards of a century ago Schmucker proved the propriety of this procedure.

A soldier was trephined for a gunshot injury of the frontal bone; and the ball, along with a portion of the depressed inner table and some extravasated blood, removed. On the nineteenth day the dura mater rose into the trephine-hole, and fluctuated. A small puncture was followed by the escape of two ounces of whitish lymph (*sic*); and three days subsequently, the delicate opening having closed, a crucial incision gave vent to an ounce of a similar fluid. The wound was now kept open, and the man recovered. (*Chirurgische Wahrnehmungen*, bd. i. p. 170.)

Guthrie (*op. cit.*, pp. 366-368), after the battle of Toulouse, incised the dura mater and evacuated pus in two cases, and one died.

An officer was struck on the occipital protuberance by a musket ball. Symptoms of irritation of the brain having set in, Giersch applied the trephine under the supposition that there was fracture of the internal table, but the bone was found to be sound, and there was slight purulent effusion beneath it. On removing the dressings a few hours subsequently, the prominent dura mater was punctured, and a considerable amount of bloody matter evacuated. Rapid and complete recovery ensued. (*Rust's Magazin für die Gesammte Heilkunde*, bd. ii. p. 127.)

The records of the more recent campaigns contain only a few examples of operation for abscess of the cavity of the arachnoid. I am not aware that it was practised during our late war; but it was resorted to by Beck

(*op. cit.*, p. 133), in Schleswig, without benefit; by Mr. Cowan (*Williamson, Military Surgery*, p. 36) in the Crimea; his patient died; by a surgeon (Demme, *op. cit.*, abth. ii. p. 75) at the St. Gaetano Hospital, Brescia, 1859, but the man was so much exhausted that death was inevitable; and by Pirogoff (*op. cit.*, pp. 155 and 185), in the Crimea, with success. The last case was one of coma without paralysis consequent upon a complicated fracture of the frontal bone. The trephine was applied, the dura mater opened, and a spoonful of matter evacuated. Consciousness was at once restored, the man answered properly all questions, and was well in two months. All these cases were examples of trephining for gunshot injury, save that of Beck, which was due to superficial sabre-cut of the bone; so that, if the few instances that I have here recorded be regarded as exponents of the mortality of incising the dura mater to give exit to pus in army practice, it will be found to be in the proportion of 50 per cent., four out of the eight having succumbed.

No case is recorded of recovery from effusion of pus into the arachnoid cavity without its having been let out; it is never absorbed in this situation. On the other hand, if a free incision be made into the dura mater so as to admit of its ready escape, one-half of the patients, as I have just shown, fight their way through. The necessity of the operation is, therefore, not to be questioned. In civil life, too, success has attended the procedure, of which the following are striking illustrations:—

Lohmann (quoted by Bruns, *op. cit.*, p. 926) trephined a man on the third day after a blow from a ten-pin ball, and removed a clot of upwards of four ounces' weight. Eight days subsequently, the symptoms of inflammation increasing, the dura mater was punctured and a considerable quantity of matter evacuated.

A man struck his head against the corner of a writing-desk, and suffered from severe headache for several months. Mursinna (*ibid.*, p. 937) removed three circles of the occipital bone and opened the dura mater, with the effect of giving vent to a very offensive yellowish fluid, which he regarded as a collection of disorganized blood.

De La Peyronie (*Hist. de l'Acad. Roy. des Sciences*, 1744, p. 212) trephined the parietal bone of a lad for symptoms which made their appearance on the twenty-fifth day after a blow from a stone. On incising the inflamed dura mater, three ounces and a half of pus, which extended by the side of the falx down to the corpus callosum, escaped.

Mr. Dumville (*British Med. Journ.*, vol. ii. p. 743, 1858), of Manchester, removed a circle of the denuded frontal bone, for supposed abscess of the dura mater, three weeks after a scalp wound. The membrane was inflamed and perforated at one point, from which, after the insertion and withdrawal of a probe, stinking matter spirted out.

A man, aged 37 years, was struck over the supra-orbital ridge, and marked symptoms of compression set in at the end of three weeks. Professor Hughes applied the trephine at the injured spot, and found fragments of the inner table of the frontal bone depressed on the dura mater, without involvement of the outer table. Upon incising the dura mater and evacuating a quantity of pus, there was an immediate return to consciousness. (*Iowa Med. Journ.*, 1868, p. 34.)

Dr. Watson (*Edinburgh Med. Journ.*, July, 1870, p. 40) narrates the case of a girl aged eight years, in whom symptoms of phrenitis followed a blow on the forehead from a piece of road-metal. At the expiration of nine months, a probe passed to the depth of $2\frac{1}{2}$ inches into an intramembranous abscess,

through a small aperture at the left frontal eminence. Whenever the opening closed, the child became unconscious and convulsed, but she was free from symptoms at other times. A crucial incision of the dura mater, after trephining, permitted the escape of a wineglassful of pus.

In a very similar case, occurring in a youth sixteen years of age, there was a fistulous opening in the left parietal bone, which discharged sanious fluid. On cessation of the discharge, signs of compression set in. Roux (*Archives Générales de Médecine*, t. 24, 1830, p. 280) applied the trephine, enlarged the hole in the dura mater, and evacuated a large quantity of matter.

Abscess of the brain may result from any form of injury of the skull, and is certainly fatal unless it be evacuated. Dissection of numerous cases has demonstrated that, provided life has been spared for a sufficient length of time, the brain frequently makes efforts to rid itself of the foreign fluid by discharging it at the nearest point, as into the lateral ventricles or the sac of the arachnoid. Rare cases have also been reported, in which it is highly probable that the sudden and abundant escape of pus from the ear nose, or orbit, some weeks after injuries of the head, was due to the rupture of cerebral abscess and its discharge through the petrous portion of the temporal bone, the cribriform plate of the ethmoid, or a fractured orbital portion of the frontal bone. I have endeavoured to show that pain in the head and signs of compression, accompanied by febrile movement, occurring some days after a local injury, indicate inflammation of the contents of the skull, and that, under these circumstances, it is proper to apply the trephine. If no pus be found on the dura mater, but the state of the membrane indicates matter beneath it, it should be opened. Should the symptoms be not relieved, the inference is clear that the pus is seated in the tissues of the brain, and the question of letting it out naturally depends upon its existence and position. Of the individual symptoms of cerebral abscess the best are defined and intense pain, corresponding with the local lesion, and the occurrence of limited hemiplegia and convulsions, some time between the fifteenth and twenty-seventh days. Headache ordinarily corresponds to the seat of the abscess, and this is the most important sign of its position; while the more the pus encroaches on the gray cortical substance, the more weighty and numerous will be the phenomena. With this history the surgeon is warranted in opening the skull and incising or puncturing the brain. Special symptoms may be of assistance in determining the situation of the abscess. Thus, aphasia associated with right-sided paralysis, points to abscess in the vicinity of the walls of the left fissure of Sylvius, at least such is the history of several cases after gunshot, quoted by Lohmeyer. (*Op. cit.*, pp. 321, 322.) In one, trephined by Petruschky, there was an abscess of the left frontal lobe which had destroyed the second and third frontal convolutions, while in two others the same parts were extensively destroyed in the first and in the second, there was, in addition, a large abscess of the left hemisphere, which corresponded to the site of the wound and extended to the cornu Ammonis. In the cases of Detmold, Weeds, and Maisonneuve, referred

to below, the loss of speech depended, in two, upon abscess of the frontal, and, in the third, upon abscess of the middle lobe. In this state of affairs I can see no objection to cutting into the brain. The operation can scarcely aggravate the case. There is nothing to be lost, while much may be gained in the way of prolonging or even saving life. Several instances are on record in which trephining, or further procedure after that operation, might have resulted in recovery, of which the following are selected as illustrations:—

In an officer, under the charge of Mr. Dease, secondary symptoms clearly pointed to an abscess of the brain, and its existence was confidently predicted by that surgeon, who desired to open the skull and evacuate it. In consultation, however, his opinion was outweighed, and dissection disclosed a collection of four ounces of matter and clotted blood within one-tenth of an inch of the surface of the brain. Hennen (*op. cit.*, Case XLVIII.), who relates the case, regrets that relief was not attempted.

Roux (Chassaignac, *Plaies de Tête*, p. 192) went so far as to incise the dura mater, but found no pus. The symptoms of compression continued and increased, and a large abscess was found post-mortem below the trephine-hole, so superficially seated that its evacuation would have been easy, and, possibly, beneficial.

De La Peyronie (Sabatier, *Médecine Opératoire*, t. ii. p. 65, 1832) trephined a man, and let out a large quantity of pus from beneath the cranium. The symptoms were relieved temporarily, when the dura mater was cut open without result, but incising the brain was not permitted. Post-mortem examination disclosed an abscess at the depth of about one-third of an inch below the artificial opening.

The removal of pressure over the abscess may even suffice to permit the pus to make its way to the surface, as in the subjoined instances:—

A child nine years of age, suffering from compound depressed fracture of the frontal bone, was trephined by Petit. (*Traité des Maladies Chirurgicales*, t. i. p. 91, 1790.) Fever, with headache, set in on the night of the fifth day, and on the following day the discoloured and distended dura mater bulged into the opening. On being laid open, a tablespoonful of brown, fetid fluid escaped, but the symptoms increased until the night of the eleventh day, when the rapid improvement disclosed that a large abscess had burst and saturated the dressings with offensive matter. In two months the cure was complete.

"In a case of this description," writes Professor Pancoast (*Treatise on Operative Surg.*, 2d ed., p. 106), "on which I operated during the winter of 1843-4 before the class of the Jefferson Medical College at the Philadelphia Hospital, the altered dura mater puffed up through the opening made by the trephine. On incising this, the soft pulsatious cerebral substance pouted through the orifice, and gave to the finger a distinct feeling of fluctuation below." As life was not in immediate danger nothing further was done, and the abscess opened spontaneously on the following day, with the effect of relieving the coma to a considerable extent. The patient continued to improve, walked about the wards, and conversed rationally, the opening in the meanwhile discharging more or less pus. At the end of sixteen days the flow ceased altogether, the delirium and coma returned, and the man died. Dissection showed that the orifice in the dura mater was too small, and blocked up with fungous granulations from its margins. The cavity of the abscess had refilled and communicated with the posterior horn of the opposite lateral ventricle.

Schmucker (*Vermischte Chirurgische Schriften*, Bd. i. p. 283) narrates the case of a grenadier who fell and struck his head against the corner of a stone, whereby a compound depressed fracture of the frontal bone was produced. On the following day trephining, with removal of the splinters and elevations of the bone, restored consciousness. The patient was in the best of spirits

until the fifth day, when feverish symptoms set in, followed in twenty-four hours by bulging of the dry and brown dura mater into the trephine-hole. Puncture evacuated upwards of a tablespoonful of laudable pus from a superficial abscess of the brain. The symptoms disappeared, particles of the brain tissue were cast off, and the patient was well in two months.

Two remarkable cases are on record, in which abscess of the brain was diagnosticated, and the surgeons were bold enough to make numerous incisions in the brain with a view to its evacuation. In that of Dr. Detmold (*Amer. Journ. Med. Sci.*, vol. xix., N. S., 1850, p. 86) the symptoms were relieved and life preserved for seven weeks, while in the case of Maisonneuve (*Union Médicale*, 1853, p. 48) the matter was not reached, although the post-mortem examination showed, that, had the fifth puncture been one centimetre deeper, the abscess would have been evacuated.

The following case reflects the greatest credit on the operator in regard to the diagnosis and treatment :—

An officer was struck by a pistol-ball which grooved the outer table of the left frontal bone. Marked symptoms of encephalitis set in on the tenth day, but they yielded to general measures. On the twenty-third day, in consequence of excesses of diet, rigors, intense cephalalgia, and other ill-boding signs, declared themselves, and were followed in seventy-two hours by convulsions, and, later, by aphasia with right hemiplegia and coma. On the twenty-ninth day after the injury, Surgeon J. F. Weeds, of the army, trephined over the left frontal eminence, and found a small scale of the inner table lying loose on the slightly lacerated dura mater. A knife was passed into the substance of the brain, and half an ounce of greenish, fetid pus evacuated. The symptoms of compression disappeared in ten hours, and the patient recovered. (*Nashville Journ. Med. and Surg.*, April, 1872, p. 156.)

That the practice of trephining is the correct one, where symptoms are lighted up after a punctured wound, is shown by the following case :—

A peasant, aged twenty-four years, was injured on the 23d of February, but concealed his condition until the 9th of March, when Dr. Krauss found a four-cornered punctured wound in the anterior superior angle of the parietal bone, through which a probe passed into the skull to the depth of four lines. His general condition was that of great stupidity; he answered questions with difficulty; the pulse was fifty; but convulsions were absent. On the following day, removal of a circle of bone and enlargement of the hole in the dura mater were followed by the evacuation of a large abscess of the substance of the brain. The man recovered. (Quoted by Bruns, *op. cit.*, 746.)

Circumscribed collections of pus, resulting from the irritation of foreign bodies, seated superficially or deeply, but without an external communication, have also been successfully tapped. The following examples demonstrate the wisdom of operating as soon as symptoms set in.

A young man was struck on the head with a knife, the wound healed, and there was merely intermittent neuralgic pain about the scar. He was admitted into the Hôtel-Dieu, upwards of two years subsequently, for sudden stupor with febrile action, and the point of the knife-blade was found sticking in the bone. Dupuytren¹ applied the trephine; but the coma was not relieved, and opposite hemiplegia appeared. The dura mater was now opened, and a bistoury carried into the substance of the brain to the depth of one inch, when a large quantity

¹ Leçons Orales de Clin. Chirurg., 1839, t. vi. p. 146.

of pus escaped. The symptoms disappeared that night, and the patient gradually recovered. Additional recoveries from abscess complicated by the presence of knife-blades, in which, however, the symptoms set in in a few weeks after the injury, are narrated by Dr. Moritz¹ and Dr. Renz.² In the case of the latter surgeon the pus was evacuated by aspiration. Lafaye³ cured a man in whom the trouble was due to the head of an arrow imbedded in the brain.

There are not a few cases on record of recovery from abscesses complicated by the presence of small projectiles. The following are illustrations of this state of things attested by living witnesses:—

Dr. Hutchison, of Brooklyn, amputated the leg of a soldier, one month after compound fracture of both bones by shell. He had also received an injury of the skull from a bullet. While he was unconscious, the head was examined, and several pieces of the necrosed parietal bone removed, along with a fragment of ball of very irregular shape, which appeared to be lying in the cerebrum. Its extraction was followed by the escape of two drachms of healthy pus from an abscess in the substance of the brain. He recovered without an unpleasant symptom. (*New York Med. Journ.* 1866, p. 217.)

A soldier suffered from a gunshot fracture of the skull received in the Crimea. Some weeks subsequently, an aperture was discovered in the vault of the cranium too small to admit the finger, from which pus mingled with blood-clot and broken-down brain tissue was escaping. He was almost imbecile, and, although a mere lad, he looked old, and was much emaciated. Dr. Watson (*Edinburgh Med. Journ.*, July, 1870, p. 44) trephined. A considerable abscess was evacuated, and a ball removed from the left hemisphere.

Finally, the abscess may have an external communication, but the opening in the skull or membranes be too small to admit of the free escape of its contents, as in the case of Pancoast; under these circumstances the pus accumulates, lights up signs of compression, and proves fatal unless free vent be afforded. The indication here is to trephine at the site of the opening, and that this is the correct practice is shown conclusively by several cases, not gunshot, however, quoted by Bruns (*op. cit.*, pp. 1014–1018), and by one under the charge of Dr. Middeldorpf. In the latter the discharge was reinstated by chiselling away portions of the bone so as to make an opening of sufficient size to admit the point of the index finger. The patient, a male, 23 years old, was well in two months and a half. (*Schmidt's Jahrbücher*, Bd. 143, 1869, p. 203.)

3. COMPRESSION FROM DEPRESSED BONE.—The symptoms may be immediate; but I have never seen an instance in which this state was due purely to this cause; and I believe that instantaneous symptoms are less frequent than is generally supposed. With the view of determining this point, I have examined 180 recorded examples of depressed fracture from gunshot, which were attended with, or followed by, compression, and find that the signs are immediate in only 30, or 16.66 per cent., or in the proportion of one to every six. Inspection of the fatal cases disclosed, in the great majority of instances, concomitant contusion of the brain, and in many of those that recovered, the symptoms were mixed, and pointed to

¹ Quoted by Bruns, *op. cit.* p. 1006.

² Schmidt's Jahrbücher, Bd. 138, 1868, p. 259.

³ Sabatier's Med. Oper., t. i. p. 64.

that complication. Hence the inference is clear that contusion or laceration of the substance of the brain, and not the depressed bone, is the source of the symptoms. In the remaining 150 cases, the compression came on at a period which varied from a few hours to several days; so that it is of the utmost practical importance that the surgeon should remember that depression of the skull may, and usually does, excite remote phenomena, when no signs of compression have immediately followed the injury.

But the surgeon must not allow himself to be seduced into the idea that these late symptoms depend solely upon the displacement of the bone, since nothing can be further from the truth. An analysis of the above 150 cases indicates that the more or less remote signs of compression were due exclusively to the depressed bone in only 20 per cent. of the whole number; that they depended upon displacement, associated with local extravasation of blood, in 8 per cent.; while they were due to combined collection of pus between the bone and the dura mater in 3.33 per cent., to simple arachnitis in 1.33 per cent., to suppurative meningitis in 17 per cent., and to abscess of the brain in nearly 51 per cent.

I think I am warranted in stating that it is not impossible to distinguish upon which of these several pathological conditions the symptoms depend by noting, in connection with other signs and the history of the case, the date of their appearance.

When the compression sets in at a period varying from thirty minutes to eighteen or twenty hours, there having been a lucid interval, it is due to effused blood, which starting from the seat of depression, gradually extends over the dura mater, until a clot of sufficient size to awaken symptoms is formed. If headache, more or less pronounced, febrile movement, exalted nervous irritability, as indicated by intolerance of light and of sound, and slight delirium, or other signs, appear at any time between the second and sixth day, seventy-two hours being the average, they are induced by hyperæmia of the brain and its membranes, this state, unless held in subjection by appropriate measures, passing rapidly into that of inflammation, and there will be found either depression, or the trifling displacement will be combined with a small local clot. When the symptoms of cerebral disturbance depend upon the formation of pus, they are usually ushered in by rigors, more or less defined, and set in at a later period. Thus, as I have shown at a preceding page, in suppurative pachymeningitis they do not appear before the sixth day, rarely before the eleventh, and generally prior to the expiration of the second week, the average being the thirteenth day. Suppuration of the arachnoid and pia mater does not disclose itself before the eighth day, but usually within the second, and rarely after the third week, the average being, as in the former instance, the thirteenth day. When symptoms are awakened by intracerebral abscess, the most frequent of all the causes of secondary compression, they

do not manifest themselves before the thirteenth day, may be delayed for months, and are most common between the fifteenth and twenty-seventh days, the average being the twenty-fifth. In two cases, which seemed to be examples of simple arachnitis, the phenomena were apparent, in one on the eighth day, and in the second on the forty-third day, so that no general law can be established in regard to this extremely rare occurrence.

The above data include those cases in which the inner table of the skull is depressed more extensively than the outer, those of depression of the inner table alone, and those in which spicules of bone penetrate the meninges or the brain; and they indicate that primary meningitis, encephalitis, or meningo-encephalitis are not to be anticipated when the contents of the skull are not exposed. When, on the other hand, there is a compound comminuted fracture, and splinters of bone are driven into the membranes or the brain, primary meningitis or encephalitis is the rule, and may prove fatal within forty-eight hours after the infliction of the injury, although, in rare cases, the symptoms do not set in until the second week.¹

The *treatment* of compression from depressed bone is still a matter of much dispute. That a man may recover from a very considerable and very unequal displacement of the tables of the skull is attested by numerous examples;² but that such cases survive in greater proportion than those in which the pressure has been relieved by the resources of art, is another and a highly important question, which has not been sufficiently examined by writers on army surgery. I have looked into the particulars of the management of 224 depressed gunshot fractures of the skull,³ and find that, in 90, operative measures, under which are included the use of the trephine, elevator, saw, and simple extraction of fractions of bone with

¹ In an elaborate essay, entitled, *Klinisches und Experimentelles zur Lehre von Trepanation*, *Langenbeck's Archiv*, vol. vi. pp. 595-647, with which I met after the above sentence was penned, Dr. H. Fischer, of Berlin, states his belief that primary symptoms do not ensue from foreign bodies when the skull is not opened, and that suppurative inflammation is quickly induced by movable penetrating substances, as detached spicules, when the brain and its membranes are exposed, although fixed spicules that pass into the brain through the dura mater, under the same circumstances, incite meningitis more slowly. These deductions are founded on clinical observation and numerous experiments on dogs.

² Of these one of the most extraordinary is that of a man who lived thirteen years with a funnel-like depression of the vertex, which extended inwards to the depth of eighteen lines from the surface of the scalp, without there having been any symptoms whatever. (Hennen, *Principles of Military Surgery*, 3d ed., Case XXXIX.)

³ Only five of these cases occurred in my own practice. The remainder are taken indiscriminately, not selected, from the records of the campaigns in the United States, Italy, the Crimea, Schleswig-Holstein, Bohemia, the siege of Antwerp, and the writings of Paré, Baudens, Larrey, Freidburg, Stromeyer, Beck, Schwartz, Demme, Schmucker, Guthrie, S. Cooper, Hennen, Dease, and others.

the forceps, were instituted for marked symptoms of compression. Of these 45, or 50 per cent., died. Of 134 instances, on the other hand, in which the treatment was purely conservative and antiphlogistic, and in 43 of which the signs of compression were very doubtful, 61 recovered, and 73, or 54.47 per cent., died; or if the doubtful cases, which resulted in 10 deaths, be excluded, 91 cases of compression from depressed fractures, treated expectantly, afford 63 deaths, or a mortality of 69.23 per cent., a result in favour of operation by 19 per cent.

These statistics show, that, when symptoms result from depressed bone, the chances of saving life are on the side of surgical interference. The trephine was applied in 49 of the above 90 operations, with 26 deaths, the mortality being 53.06 per cent.; fragments of the shattered bone were removed by the forceps in 28 instances, with a fatality of 14, or 50 per cent.; the elevator was resorted to in 10, of which 3, or 30 per cent., were mortal; while in 3 instances Hey's saw was followed by death in 2, or 66.66 per cent. An examination of these facts does not disclose that the operation of trephining is more dangerous than other operative procedures. More patients recover after than without surgical interference, and many lives might have been saved by a timely resort to it.

In deciding the question of operation in cases of depressed fracture, it appears to me that primary symptoms of compression are of less importance than the existence of intruding fragments of bone, which must, sooner or later, be they fixed or movable, act as sources of irritation, and induce secondary phenomena due to inflammation of the brain or its membranes. It is true that immediate symptoms sometimes attend simple fractures with depression, the latter condition being frequently associated with a local clot, and, unless I greatly mistake, the rule of trephining, the symptoms being conspicuous, should be absolute under these circumstances. It is equally certain that instantaneous compression may be marked without there being any appreciable evidence of fracture. If the history be clear that there was no interval of consciousness, but that the symptoms were decided from the very outset, fracture with displacement of the internal table may be inferred, as in the case of Beck, quoted above.¹ Opening the skull is warranted for this condition. In fractures with depression and comminution, be they simple or compound, in punctured fractures, and, in fact, in all injuries in which the internal table is displaced to a greater extent than the external, the great danger is suppuration of the contents of the skull from the irritation provoked by pointed fragments of bone resting on the dura mater, perforating or lacerating that membrane, or penetrating the brain. Hence I hold that, in all these cases, it is far wiser to remove sources of irritation at once, thereby preventing inflam-

¹ For further information on this subject, the paper on *Fracture of the Internal Table of the Skull*, by Mr. W. F. Teevan, *Brit. and For. Med.-Chir. Rev.*, vol. 36, p. 189, may be consulted.

mation, than to temporize or wait for incipient meningitis or phrenitis as an indication of their presence, since the successful issue after surgical interference is greatly compromised when inflammation is once lighted up. Finally, trephining is demanded when secondary symptoms—those laid down as indications of pachymeningitis—arise after a gunshot blow on the head, without evidence of injury of the bones, the assumption being fracture with depression of the internal table alone.

4. COMPRESSION FROM FOREIGN BODIES.—A penetrating body, as a ball, which lies on the dura mater or the brain, or lodges in the latter, does not provoke immediate symptoms, unless it be very bulky, and it is even then generally associated with some other compressing agent.

Thus, a Russian soldier was struck at Witepsk, in 1812, by an iron shot of seven ounces weight, which perforated the frontal bone, lacerated the dura mater, and rested on the upper surface of the right frontal lobe, leaving an opening in the bone of only three or four lines in diameter. The orifice was enlarged by three applications of the trephine, when, by means of the elevator and forceps, the missile, along with a large clot of blood, was extracted. The symptoms were relieved at once; the pia mater was ecchymosed, and the brain presented a depression of about four lines in depth. The man recovered. (Larrey, *Mémoires de Chirurgie Militaire*, t. iv. p. 183, 1817.)

When the signs of compression are instantaneous, the injury is usually associated with considerable depression of bone; when they are intermediate, they generally depend upon extravasation of blood on the dura mater; and when they are remote, they are due to inflammation terminating in suppuration. The last group constitutes by far the most common of all the compressing agents, and it shows that, as in the case of spicules of bone, it is absurd to ascribe the consecutive brain troubles to the intruder alone. Balls are sources of irritation, and not of primary compression, although they may remain in the cerebrum for years, 'without causing mischief,' until, through some indiscretion, as a drinking bout, their presence is resented, and death suddenly takes place from apoplexy, an affection to which foreign substances seem to predispose. Such, briefly, is the history of most of these cases, when they do not terminate in abscess.

However paradoxical it may appear, experience proves that a ball, or a section of a ball, which lies in contact with, or lacerates, the dura mater, is borne with impunity less often than when it has lodged in the white substance of the brain. If permitted to remain, that membrane is constantly rubbed by the foreign substance, through the movements imparted

¹ The *Mémoire sur les Plaies du Cerveau*, by Quesnay, published in the *Mémoires de l'Acad. Roy. de Chir.*, t. i. and the *Literatura Medica Digesta* of Ploucquet, Tubingen, 1809, contain large collections of cases in which foreign bodies were encysted in the brain. The writings of Schmucker, Bilguer, Heister, Bruns, Beck, Chelius, Thomassin, Percy, Baudens, Larrey, Serrier, Hennen, Guthrie, and T. H. Andrews, of this city, may also be consulted by those who are curious on this subject.

to it by the motions of the brain, and it will, sooner or later, excite suppurative meningitis or cerebral abscess. These sources of the symptoms of compression occur usually within the first four weeks, but they may be delayed for months. Thus—

A private of the 3d Regt. Ky. Cavalry, in an affair with Forrest's forces, January, 1862, was struck by a conoidal pistol ball, which fractured the right parietal bone, close to its superior posterior angle, and to the right of the middle line. There were no primary symptoms, and the man was able to return with his retreating comrades to Calhoun, Ky., a distance of about ten miles, where I saw him ten days after the infliction of the wound. The gravity of the lesion had not been appreciated; but, from all the information that I could elicit, I judged that symptoms of compression had set in on the seventh day. There was a small, suppurating fungous protrusion of cerebral substance from the wound; the man was profoundly comatose, and died within a few hours. One-half of the projectile, imbedded in pus, lay under the skull at a little distance from the fracture; the dura mater was much lacerated and pressed upon by depressed spicules, the meshes of the pia mater were infiltrated with purulent fluid; and a large abscess of the right middle lobe of the brain communicated with the fungous mass.

When the dura mater is not injured, the symptoms set in later. A striking example of this occurrence, during our late war, is afforded by the following abstract:—

Corporal S., 12th Mass. Vols., aged 39, received at the battle of Fredericksburg, Dec. 12th, 1862, a slight wound of the right lower lid; the corresponding eye was destroyed, while the left eye was unnaturally prominent, but its functions were normal. After three weeks, the man was walking about, and complained merely of occasional pain over the left orbit, appearing to be perfectly well until Feb. 6th, 1863, when he had a chill, but no marked cerebral disturbance was evident until the 10th inst., when nocturnal delirium supervened. On the ensuing day he became comatose, and died Feb. 15. On dissection, a conoidal musket ball, incrustated with callus, which had entered through the walls of the right orbit, was found wedged between the sphenoid and left orbital plate of the frontal bone, and resting in contact with the dura mater. Over the ball, at the base of the left anterior cerebral lobe, was an abscess containing two drachms of pus. (*Circular No. 6, S. G. O., p. 15.*)

A still more remarkable example of the remote period at which symptoms may be lighted up by the presence of a small body on the dura mater is narrated by Morand:—

A soldier was struck at the battle of Parma, in 1734, by a spherical musket ball, which inflicted an apparently insignificant injury in the left temporal region, the symptoms of concussion having been mild. The wound remained fistulous; denuded bone could be detected with the probe; but the presence of a missile was not suspected. The man was troubled with intermittent headache, and expired suddenly in convulsions, at the expiration of nine months. The ball had penetrated the squamous portion of the temporal bone, being almost entirely within the skull, and pressed upon the dura mater, which was in a state of incipient gangrene. The left hemisphere of the brain was converted into an enormous abscess. (*Op. cit., Première Partie, p. 159.*)

The treatment of cerebral compression from foreign bodies, whether the symptoms be immediate, intermediate, or remote, is obvious. In any case, the indication is to remove the intruder, whether the object be to

relieve existing symptoms or prevent consecutive inflammation. When a ball is seated on the dura mater its detection is usually easy ; but it should be remembered that projectiles, or sections of projectiles, even if they be conoidal, as proved by several cases that have occurred in recent wars, sometimes glide between the dura mater and skull, and lie at some distance from the point of penetration. Under these circumstances, the practice of Larrey should be followed. Thus—

A spherical ball entered at the middle of the frontal bone, passed beneath the cranium, and was arrested at the lambdoidal suture. Its presence having awakened secondary signs of compression, Larrey introduced an elastic bougie, and carried it backwards until he came in contact with the missile, when, after making a corresponding measurement externally, he applied the crown of a large trephine, extracted the ball, and evacuated some pus mixed with blood. The man recovered.

In a second case, an elastic sound, passed into the orifice in the left parietal bone, came in contact with the foreign substance near the occipital suture, at which point the skull was also fractured, as indicated by ecchymosis of the scalp. As the symptoms of compression were increasing, trephining enabled Larrey to remove the half of a ball, which was flattened and partly imbedded in the bone, along with a considerable quantity of black blood. For a fortnight the man did well, but he was carried off by an intercurrent fever. (*Clinique des Campagnes*, t. i., pp. 215-216, and *Mém. de Chir. Mil.*, t. ii., p. 139.)

When a ball is presumed to have entered the brain, if a single introduction of the finger, or a female catheter, which should be permitted to sink towards the object by its own weight, rather than pushed forcibly onwards, fail to detect it, the man should be let alone, since it is better to temporize than to probe about in an injured brain. Numerous cases are on record, which demonstrate that the medullary, not the cineritious, substance of the cerebrum accommodates itself to the presence of a foreign substance, or makes efforts to throw it off when suppuration has set in. If the projectile be detected, all reasonable efforts should be made at its extraction, trephining of the opening in the skull being resorted to if it be too small to admit of its easy removal. The wisdom of this practice is confirmed by the recent case of Watson, quoted under the treatment of abscess of the brain, and by that of Howard, of New York (*Amer. Journ. Med. Sci.*, Oct. 1871, p. 385), in the latter of which, a misshapen conoidal ball, buried in the cerebrum, was successfully removed, along with some blackened and diffuent brain tissue, two weeks after a gunshot wound of the frontal bone, the aperture in the bone being one-thirtieth smaller than the size of the bullet. In this case the diagnosis was based upon symptoms of compression and a single hair wedged in one of the fissures. The presence of one or more hairs in the fracture is an important diagnostic aid, as they could scarcely have intruded without being introduced into the line of separation by a penetrating missile. A tuft of hair wedged in a minute fissure, and symptoms of suppurative pachymeningitis, led Dr. Watson, in the case quoted previously, to suspect pus and a fragment of a ball on the dura mater.

In some cases the missile perforates the brain, but not the skull.

Under these circumstances, if it can be traced, an attempt should be made to remove it. Thus, Guthrie (*op. cit.*, p. 371) states that a man was brought to him at Talavera, in an insensible state. He followed the ball for nearly four inches with a probe, carried in close contact with the inner surface of the vault of the cranium. An incision opposite this point revealed a fracture, which was excised by the trephine, and the ball, which had nearly effected perforation, was removed. Death, however, ensued in forty-eight hours.

PHILADELPHIA, December, 1872.

ART. III.—*Epidemic Cholera in South America.* By ENRIQUE M. ESTRAZULAS, M.D., late Resident of the Cholera Hospital at Montevideo, Uruguay; Resident Physician to the Children's Hospital, Philadelphia.¹

It is generally held that cholera can never be produced *de novo* and has never been so produced; still, we think that an examination of the following facts in relation to its occurrence in Paraguay will be interesting as tending to the establishment of proper views on the subject. The epidemics in Paraguay thus far have been unnoticed by medical writers, and we feel it proper, therefore, to present the facts as they occurred, although the conclusions drawn from them may be opposed to the doctrines held at present.

For the better understanding of the progress of the successive epidemics of cholera in South America, and of some of the causes of its generation, it is necessary to give a short account of the topography of the country.

The region of La Plata or the River Plate where the epidemics of cholera occurred in 1866, '67 and '68, is situated in the middle and southern portion of the continent of South America, and comprises the Uruguayan and Argentine Republics, which are the territories on its banks, and also nominally the Paraguayan Republic, where the Paraguay and Paraná Rivers rise to form by their confluence further south, the great stream of La Plata.

These countries are comprised between the parallels 24° and 34° S. Lat., and meridians 50° and 60° W. from Greenwich. Within the range of ten parallels there exists in this region a diversity of climates, from the tropical—at the confluence of Paraguay and Paraná Rivers—to the mild and temperate at their termination in the La Plata. Thus in the former the average temperature is from 40° to 60° F. in winter, and from 70° to 100°

¹ An Inaugural Essay for the degree of M.D. in the University of Pennsylvania, to which the Alumni prize was awarded at the Commencement held March 13, 1873.

in summer, while at the latter the average is 50° to 80° in summer and 40° to 0° in winter.

The La Plata proper is formed, first, by the Paraná River (1300 miles long) which in itself is a continuation of the Paraguay; and, second, by the Uruguay (400 miles long) formed by the Rio Negro and other smaller affluents.

The confluence of these rivers forms the great estuary of La Plata, 140 miles wide, having on its left bank the Uruguayan Republic, and on its right the Argentine, with their respective and rival capitals, Montevideo and Buenos Ayres, the two great depôts of an immense European trade.

The city of Montevideo and the remaining coast of Uruguay are bounded by the Atlantic Ocean, while its opposite city, Buenos Ayres, is surrounded by the fresh water of the La Plata. These two cities are the great and only harbours of the southern part of the continent, and consequently have a constant and open communication with European ports, and are visited by over 10,000 vessels during the course of the year, not only for direct trade, but they also serve as intermediate stations for the whole domestic and foreign trade of the countries bordering the Paraná, Paraguay, and Uruguay Rivers. So, there are two great lines or routes of travel, one direct of imports and exports from European ports to Montevideo and Buenos Ayres, and another secondary one from these two cities up to all the ports along the banks of Paraná, Paraguay, and Uruguay Rivers. All vessels coming from abroad discharge their merchandise and passengers at either Montevideo or Buenos Ayres, to be reshipped in other vessels suitable for river navigation.

Paraguay is bounded on the east by Brazil, and on the north, south, and west, by Brazil and the Argentine Confederation and Uruguay, so that it is surrounded and isolated by the latter countries, with which it became involved in war.

It was not until 1866 that cholera became known to the countries of the La Plata; and, prior to the appearance of the epidemic in Paraguay, not a single vessel from infected ports had arrived either at Montevideo or Buenos Ayres, and not a single case occurred at either city before it had been imported from Paraguay.

In 1866 the allied armies of Uruguay, Brazil, and the Argentine Republic were brought, by the war against Paraguay, up to the confluence of the Paraguay and Paraná Rivers, and thus the necessary strategic operations greatly increased the river travel between Montevideo and Buenos Ayres, on the one hand, and the seat of war on the other, where a neighbouring city (Corrientes, in the Argentine territory) was made a military depot for the allied armies.

Above Corrientes the allied squadron kept a constant and unbroken blockade, which, conjoined with the fortifications and obstructions in the

Paraguay River, served to keep the Paraguayan troops totally isolated from the rest of the world.

The vessels carrying troops from Brazil to the seat of war first visited Montevideo, and were afterwards carried up the Paraná River, thus making a direct communication with Corrientes and serving to keep one line open with the seat of war, for troops, merchandise, and passengers, and another for the return of sick, wounded, and traders.

The voyage from Montevideo lasted from seven to nine days by steamers, and from fifteen to twenty by sailing vessels.

With the first outbreak of cholera the allied armies were encamped at Estero Bellaco, on the banks of Paraguay River at its confluence with Paraná, and remained in their positions for over a year, their invading march being checked by the entrenchments of the Paraguayan army, and by the formidable fortifications and obstructions at Curupayti and Humanitá in the river.

The allied armies numbered from 80,000 to 100,000 men, with half of that number of a floating population of merchants, peddlers, women, and jugglers. The Paraguayan army at their entrenchments varied in number from 40,000 to 60,000 men, and almost an equal number of women.

The invading army controlled only the territory they then occupied, and their advance was gradual, inch by inch, as it were, against a desperate and heroic defence of their native soil by the Paraguayans.

Estero Bellaco, where the allied armies were forced to remain for over a year, was a small extent of swampy land, bounded by the Paraguay River on one side and by impenetrable forests on the other. The banks of the river were flooded in early summer, and this freshet was followed by prolonged droughts and intense heat. Vegetable decomposition rapidly took place in the *débris* of a rich, tropical flora. Daily fighting and constant assaults created a new source of disease in the thousands of bodies of men and animals left in camp or thrown into the swamps or river, as the activity of war operations and the vigilance of camps in sight of the enemy afforded no time for burials and scarcely any for partial incinerations. Hygienic laws were totally neglected, and malaria, dysentery, and typhus were the natural results. The Brazilian army, the most numerous, was entirely composed of liberated slaves who lived with a total disregard of cleanliness, and whose diet consisted principally of jerked beef, and they suffered more and there was a greater mortality in their ranks by disease than by battle. It was among these troops that the first cases of cholera occurred in the allied camp. In the early summer of 1866 in Paraguay, the usual rains were characterized by their persistence and by alternations with the severe thunder storms of the tropics. The inundation of the camps followed, thus rendering war operations by either army impossible for a while.

When summer came and the waters subsided, the army was found

occupying a limited space of ground, overcrowded and subjected to chilly, foggy, and damp nights, followed by intensely hot days and exposed to the infection of miasmata and the effluvia from putrid emanations that were exhaled from the thousand foci that surrounded it.

The prevailing camp diseases took then a malignant and epidemic type, the mortality was fearful, and to the discouragement of successive defeats was added the impossibility of removing the camp, as a single step in this direction would have endangered the whole success of the campaign.

So, when the first cases of cholera appeared among the Brazilian troops, the whole army was obliged to remain unmoved and powerless against this new foe, which made more havoc among its ranks than the Paraguayan bullets.

The first epidemic at the allied camp occurred very shortly after cholera had appeared among the Paraguayan troops, with whom the allied came in contact only in battle, and among whom, according to the prisoners' statements, the disease was raging terribly.

The Paraguayans entrenched opposite were exactly in the same conditions of hygiene and subjected to the same influences as the allies, but perhaps having the advantage of acclimation and of a morale elated by successful resistance. As for communication with the rest of the world, it was totally impossible, as their only outlet, the Paraguay River, was strictly and incessantly blockaded. The allied, as well as the Paraguayans, fell by thousands, thus adding new sources of decomposition to the almost putrid air they had been breathing for months.

It was after the usual summer floods had subsided that the first cases of cholera appeared among the Paraguayans, and shortly afterwards among the Brazilian troops, and in a few days every regiment in camp and every vessel on the river had caught the infection. This first epidemic was of a most fatal and virulent type, the mortality being 70 per cent.

The vessels carried the disease next to Corrientes, which was then swarming with people. This city was ravaged, and from there cholera was conveyed to the neighbouring towns and villages, more especially to those on the banks of the river. The active trade between Corrientes, the intermediate ports, and the cities of Montevideo and Buenos Ayres, rendered these places liable to an inroad of the epidemic, but rigid quarantines, hygienic measures, and, above all, the approach of winter (which is severe at the mouth of La Plata) saved them from the dreaded visitor which was then in Paraguay, over 1000 miles off. The disease disappeared in the autumn of 1867 at Corrientes and the other places infected, but remained more or less active at the camp.

During the following summer the disease again assumed the epidemic form in the army, and again attacked Corrientes and all the places visited by it the previous summer. This time, however, it extended its march downward and invaded in succession La Paz, Bella Vista, Paraná, and

Rosario, till, in December, it reached at last the city of Buenos Ayres, the population of which was diminished 30,000 souls out of 150,000. On the appearance of cholera in Buenos Ayres, the opposite city, Montevideo, closed her port, and so did in turn all the cities up the Uruguay River, and for that summer, at least, escaped.

Cholera lasted in Buenos Ayres three months, extended itself to the suburban towns, and was marked by the usual fluctuations of temporary abatement and recrudescence, until at last a positive decline took place in March (autumn in La Plata), which ended with its total disappearance in the winter. This season is milder up the rivers in proportion to the distance of the towns from the mouth of La Plata, and so in an extent of over 1300 miles the disappearance of the epidemic was gradual and following an inverse march to that of its invasion. This second winter the disease left Corrientes also, but numerous cases continued to prevail sporadically in the allied camp.

The third epidemic in the summer of 1868 was marked by the same occurrences as in the previous ones—from the camp to Corrientes, from Corrientes down to La Paz, Bella Vista, etc., and finally Buenos Ayres again.

This summer, and with this third epidemic, it was Montevideo's fate to pay her tribute to the disease, and in spite of all precautions cholera was imported directly from Buenos Ayres, and in the months of January, February, and part of March, 3000 deaths occurred in a population of 120,000 souls, the comparatively small mortality being due to its superiority in soil and hygiene over its rival city, Buenos Ayres.

Montevideo being infected, the cities along the Uruguay River, then in communication with her, were in turn attacked, the disease being carried to them by steamers leaving the latter city.

The epidemic in Montevideo and Buenos Ayres disappeared again with the winter, and gradually along the rivers, following the same route as the year before.

At this time the war operations were brought to a close; the batteries at Curupaity and Humaita were forced and taken; the entrenched camp at Estero Bellaco was carried; and, while some of the troops occupied Asuncion, the Paraguayan capital, the remaining forces were scattered in light divisions to pursue the retreating enemy, who was then trying to make a last stand in the mountains of the interior. The camps were then abandoned and the troops removed to healthier territories. Their morale had become exalted by victory and the hopeful termination of a war of four years. The bulk of the army was then quartered in the capital and towns, and had better lodgings, better clothes, and better food, and no longer was subjected to overcrowding and malaria, all which causes seem to have had a decided influence in putting an end to the epidemic. The disease did not again appear in Paraguay, the focus being

obliterated. Paraguay, the rivers, and the cities at La Plata have been to this time exempt from the disease, yet at the latter part of 1868 some of the interior provinces of the Argentine Republic suffered, and from these, following the land routes of travel, it was carried to the countries along the Pacific coast, invading Bolivia and Peru and following an upward march towards the tropical countries of that side. We are unable to trace its progress further.

In regard to the character of the disease itself, we will refer to an extract from a communication from Dr. Blancas, of Buenos Ayres, to the author, and next to personal observation at the hospitals in Montevideo.

In Buenos Ayres, previous to the first invasion, the medical constitution was characterized by gastro-intestinal derangements. *The disease was directly imported from Paraguay*, however, for the first cases occurred late in summer. The invasion was rapid, two hundred deaths occurred daily; the deficiency of ozone was marked.

The second epidemic appeared in November (beginning of summer), lasted three months, made twenty thousand victims, and disappeared with the winter.

Symptoms of Typical Cases.—Copious and constant vomiting and purging of rice-coloured discharges, severe cramps, thirst, cold skin, prostration, loss of voice, emaciation, alteration of features, collapse, and death after from a few hours to one or two days; periods and type of reaction variable. Results of post-mortem examination identical with those observed elsewhere.

In Montevideo, during November and December, the medical constitution was characterized by gastro-intestinal derangements (cholera muqueux, cholera séreux—Jaccoud).

On the 29th of December, four or five cases of a suspicious nature were admitted to the hospital of "La Caridad," presenting the following symptoms: Violent purging and vomiting; bilious at first, and light, turbid, inodorous, flocculent, and rice-coloured afterwards; violent cramps, especially in the calves of the legs and abdominal muscles; great and insatiable thirst; oppression; cold, clammy skin; eyes sunken; features rapidly altered; emaciation; loss of voice; cyanotic hue of extremities and face; abdomen when relaxed retracted over the spine; breath cool; pulse and heart feeble; skin when pinched retaining the folds caused by the fingers; mind clear but apathetic; great prostration, and death by slow apnoea in a few hours.

After death the cadaver was warmer than the surrounding atmosphere; muscles of limbs and face twitched, and in some instances limbs were automatically raised from the bed; cadaveric rigidity was very marked.

Brain and membranes pale as a general rule; general dryness of the surfaces; right heart and venous system full of dark, thick blood and small clots; arterial system empty; lungs normal. Alimentary canal

containing in some cases a liquid similar to that ejected during life; no ulceration; no lesion noticeable in the intestines; mesenteric vessels stained with colouring matter; liver and spleen normal; bladder retracted and empty.

The cases admitted to the Charity Hospital died in a few hours, and on the 31st of December new cases appeared among the patients in the medical wards, and with new arrivals the whole number amounted to eighteen on that day.

All presenting these symptoms, and the rapid increase in the cases, left no doubt as to an invasion of cholera, and in consequence on the 1st of January the first cholera hospital was opened.

To this hospital were transferred all the cases that occurred at the Charity Hospital, and hourly arrivals took place from all parts of the city. In five or six days the number of cases increased so much that three additional hospitals were opened in the city and suburbs. The cases coming under my observation were all of recent occurrence, for as soon as discovered by the city authorities they were removed to the hospitals. Of these some died on their way to the hospital, others shortly after their admission.

The cases presented the same symptoms as those previously observed, and in the first weeks of January they were marked by the suddenness of the attack, the severe and rapid development of symptoms, collapse and death. At this period, reaction from the algid stage seldom took place, and when it did, the intensity of the cerebral symptoms carried the patients off. The average admissions were fifteen daily. At the latter part of January the type seemed milder and in all cases without exception, there was a history of premonitory diarrhœa, malaise, etc., for twenty-four or forty-eight hours. The stages also were more widely apart, and reaction even from the algid period often took place, though as a general rule this reaction took either the ataxic or adynamic type of the typhoid state, which prolonged the disease but also comparatively diminished the fatal results.

Frequent oscillations in the diminution or increase of cases were marked in the city, and not less so in the hospitals.

In the middle of February troops and armed citizens were called into service on account of political disturbances, and this movement not only increased the number of new cases, but gave to them the fulminant type of the early days of the epidemic.

After this time the cases began to decline gradually, and early in March the disease had totally disappeared, and the hospitals were closed.

Having enumerated these facts, we will endeavour now to point out some of the causes which existed in Paraguay, and which may have had an influence in the production of the epidemic.

Paraguay is a decidedly malarial region, and though the exhalations of low grounds in alluvial soils may and do exert different influences, yet the

tertiary or alluvial soils are not essential to the production of cholera, just as the same soils are not apt to suffer in preference while the older formations escape. The view that cholera is more apt to occur in soils of identical geological formations, is contradicted by numerous facts, and none more striking than that offered by the city of Paris, which, from the nature of its soil, should have been spared from a visitation of the disease, and yet few cities in Europe have suffered more from it, and few have furnished a larger number of victims.

The only soil influence admissible here is its porous nature, as the danger arises from the permeability of subsoils to liquids and gases. In Paraguay the soil is sandy, and consequently porous, and as a result we notice that after the appearance of cholera the disease remained endemic for three years, and not until the camps were broken up and the armies dispersed did it completely disappear. We cannot say whether the specific poison of cholera once generated was absorbed and toxically impregnated the subsoil so that its action became permanent upon the armies encamped thereon; or whether the combination of other causes existing no longer, no new generation took place; or whether its action ceased to be felt from want of pabulum or subjects for its action, as these ceased to exist in consequence of the removal of the armies. But it is a fact, that after the contending armies had abandoned Estero Bellaco and acted separately and scattered in the interior and high grounds of the country, the disease totally disappeared from its original seat, partly exemplifying the assertion that, "*Les maladies contagieuses ont la propriété de se déplacer avec les masses, qui se comportent alors comme des foyers mobiles.*"

But independent of soil influence, either as to generation or propagation of cholera, there existed other causes in Paraguay which are to our mind of more importance, and which offer a striking analogy to similar conditions in India.

The location of Estero Bellaco was, as already stated, decidedly malarial; the army not only had the river as a boundary and the land subject to periodical inundations, but it was also surrounded by pools and marshes. The country, having the same latitude as the Cashmere valley, is like it subject to all the atmospherical phenomena of a tropical land. The seasons at Paraguay are only two, summer and winter, dry and rainy. The winter is noted for heavy rains. The ground is soaked and the river overflows, and, when the subsidence of the waters takes place, the season is marked by chilly, foggy, and damp evenings; while thick vapours in the morning, which only disappear late in the day, under the influence of the sun's rays, give place to several hours of intense heat, which subjects land, plants, and animals to a species of coction, a faint idea of which can be had in the *dog days* of northern cities. This state of things lasts for a variable length of time, and thus for a considerable period the

armies were exposed to the noxious influence of alternations of heat and cold, combined with a very humid atmosphere.

When the warm season has become established the water in the pools and marshes is evaporated, and then vegetable decomposition begins with its inevitable result, malaria.

Some Indian authorities maintain that malaria is, in itself, one of the precursors of cholera; and though its positive or specific influence is denied by many, it is nevertheless recognized by some as one of the factors in its production.

If we are to accept the decomposition of vegetable matter in India's indigenous flora as one of the causes of cholera, we have to admit that analogous decomposition could be alike in its results, for the floræ of the Himalayas and the Cashmere valley are of an analogous type to that of Paraguay; and the results of decomposition must be also similar. The same may be said as to the soil changes.

But it has never been shown what there is specific in the soil of India which gives rise to cholera, and it can scarcely be admitted that, independently of other causes, the source of cholera is a peculiar, *unique* condition of soil there, for its analogue is to be found in other parts of the world.

Malaria and other zymotic diseases are generated anew whenever proper conditions for their development occur. Now, in cholera, the combination of causes, we conceive, are soil changes, vegetable and animal decomposition, atmospheric influences, overcrowding, filthiness, etc. etc. Why then should not the same combination of causes give rise to cholera in any other part of the world where they exist?

In Paraguay before these causes were present, cholera was not known; when these causes occurred, cholera appeared; and when these same causes ceased, the result was the total disappearance of the disease. These facts are undeniable and incontestable, but we must leave the delicate ground of speculation and proceed in our description.

To the putrid exhalations arising from animal decomposition (for the allies as well as the Paraguayans neglected to bury their dead, but threw most of them into the river, contaminating the waters used by the armies) are to be added purely miasmatic ones due to overcrowding; for it is well to state here that the contending armies occupied the same grounds, lived alike, and were exposed to the same influences; for within an area of a few miles extent two great armies were stationed, numbering conjointly 300,000 persons, with only the Paraguayan entrenchments as the dividing line between them.

The allies, however, were placed in a decidedly worse condition, for they were not only strangers and unacclimated, but also under an atmospheric constitution, which if in itself powerful in modifying the functions of the economy, was no less so in bringing about a general and morbid pre-

disposition. The soldiers were badly lodged, and badly fed, owing to a deficient and almost criminal management of supplies. Lax discipline brought licentiousness and debauch into camp, which were alternated by the moral depression of homesickness and the discouragement of defeat. Added to these, we had the overcrowding and filthiness, and all these causes conjointly seemed to have been most favourable for the action of miasmatic, effluvial, and putrid influences.

The medical constitution of the troops was greatly modified and aggravated by all these influences, which acted almost permanently, inasmuch as for over a year the allied armies, at Estero Bellaco, could not move in any direction; they could not advance, the enemy being too strong, nor retreat for fear of a disastrous attack.

Thus far the causes discussed can be fairly included under the head of vitiation of the atmosphere; it remains for us to consider electrical, hygrometric, and ozonic influences, the winds and barometric pressure.

In regard to electricity, abundant sources for its development existed, but the influence of electrical states is not clearly understood, and opinions on the subject are so contradictory, and the result of experiments so variable, that its value becomes negative.

Nevertheless, electrical changes were manifest, and, whether explicable or not, they are of great value, as are also variations in the ozometric state of the air. The action of these is neither understood nor defined; yet the deficiency of ozone in Paraguay was marked, and similar to that observed elsewhere.

The humidity of the air at Estero Bellaco was very great though varying with the seasons. Like other tropical countries, with luxuriant vegetation its high hygrometric state was brought on by the same causes, and increased by the incessant rains of the winter. Humidity acts powerfully in cholera, especially by adding to the impregnation of the soil.

In regard to winds, the only one we can refer to is that of the *pampero* or southwestern of La Plata, which rises at the *pampas* and sweeps across all these countries, traversing thousands of miles and coming over the countries west of La Plata as a heavy, oppressive, and dusty visitor, which, after crossing the wide mouth of this river, runs over its eastern shore to the Atlantic, its action being now peculiarly healthy and invigorating, and exerting a beneficial influence over the medical constitution of Uruguay and southern parts of Brazil.

In regard to its constancy and alternations we lack information, not being able to obtain the observations of the medical officers in the armies, and for the same reason we cannot furnish the relative barometric pressure.

We think we have, however, presented the most important facts in connection with these epidemics, and from them we may draw the following conclusions:—

1st. Cholera was unknown in Paraguay and La Plata previous to 1866.

2d. Before the armies were stationed at Estero Bellaco, no case had occurred, and after the removal of the troops the disease totally disappeared.

3d. No vessels from infected ports arrived at La Plata or Paraguay previous to 1866.

4th. If cholera had been imported from abroad, the cities at La Plata ought to have been the first attacked.

5th. Troops coming from Brazil could not have brought the disease with them, as it did not exist at any Brazilian port or city at the time.

6th. Cholera appeared first in Paraguay, and following the course of the rivers infected in its downward march all the cities at its banks.

7th. The disappearance of the successive epidemics followed an inverse route to that of its invasion.

8th. The Paraguayan army, where the disease first appeared, was secluded from the rest of the world and completely blockaded by land and water.

9th. The disease remained endemic for three years in Paraguay.

10th. The combination of causes at Estero Bellaco resembled those presented in India.

11th. The combination of causes in India has never been reproduced, except in Paraguay.

ART. IV.—*On the Prognosis of Syphilis.* By F. R. STURGIS, M.D.,
Assistant Surgeon of the Manhattan Eye and Ear Hospital, New York.

PERHAPS the most common every-day question asked of the surgeon is whether syphilis is curable, and it behooves him to answer this with some degree of certainty and accuracy. Within the past few years our knowledge of the course and duration of syphilis has undergone many important modifications, and the disease which formerly was the *bête noir* of the profession is to-day deprived of half its danger from a more accurate knowledge of its action and effects. Fully appreciating the ravages syphilis may produce, and the frightful consequences which may ensue, I do not hesitate to affirm my belief that a very large proportion of cases entirely recover and that, too, without disfiguration or loss of important organs. Like all other diseases, syphilis tends to self-limitation, somewhat dependent, it is true, upon external circumstances, such as age, constitution, and hygienic surroundings; moreover, if we accept as a fact, which I think we must, its division into the two classes of benign and malignant, and when we see how much the former preponderates over the latter, entire recovery from this disease need no longer be a matter of surprise. Were it not so, how few

of the living would have been born healthy, and when we notice the small proportion of syphilitic births to the number of cases of syphilis in any large city, even in the families of those whom we know to have suffered from the disease, it seems to me still further to corroborate my statement. I confess, however, that this is open to criticism as a mere opinion, and is difficult of statistical proof.

Let us suppose a case of syphilis presenting only the primary lesion ; are we enabled to foretell with any degree of certainty what the result will be ? in other words, will the primary or subsequent lesions give us any clue as to what we may expect in the future ? I think they will, and although *not absolute*, still they often furnish us important and trustworthy data upon which to base an opinion.

We know, in the first place, that the initial lesion is not the end of the disease ; subsequent symptoms *must inevitably* make their appearance, the question then arises : Are these symptoms going to be mild or severe ? Bassereau in his work¹ furnishes cases bearing upon the kinds of chancre which were followed by mild and by severe subsequent symptoms, and he found that where the initial lesion was phagedenic or showed a tendency to ulcerate, the subsequent symptoms were also of a severe and ulcerative type.

Thus : In 52 cases of tubercular syphilis, the initial lesion was—

Phagedenic in	18
Ulcerative in	22
Superficial in	10

In 68 cases of pustular syphilis the initial lesion was—

Phagedenic in	24
Ulcerative in	41
Superficial in	3

In 77 cases of mucous patches the initial lesion was—

Superficial in	59
Ulcerative in	15
Phagedenic in	5

In 28 cases of papular syphilis the primary lesion was—

Superficial in	17
Phagedenic in	3
Ulcerative in	8

In 170 cases of erythema, the initial lesion was—

Superficial in	146
Ulcerative in	14
Phagedenic in	10

In nearly all the cases where the disease was of a severe type the induration of the ganglia was a marked and prominent symptom.

¹ Traité des Affections de la Peau symptomatiques de la Syphilis.

In looking over these cases we see that where the subsequent symptoms invaded the deeper tissues and were of destructive character the initial lesion was generally of the ulcerative or phagedenic type, while the superficial form of primary ulcer predominated where the subsequent symptoms were mild, and Bassereau has tabulated the result in the following words : "If the initial lesions are mild in character the subsequent symptoms are likewise mild, and show no tendency to suppurate ; if, however, the initial lesion be phagedenic the subsequent symptoms will be severe, ulcerative, and attended with suppurating exostoses, necrosis, and caries."

Thus far our patient has only reached the first stage of his disease, and although we have formed some slight opinion as to what may next occur, we must await the appearance of secondary symptoms to confirm it ; our prognosis, therefore, will be somewhat guided by the length of the period of incubation, and the character of the symptoms themselves. Should they appear before their usual time and show a tendency to display, in place of the ordinary roseola, mucous patches, and other symptoms pertaining to the early stage, a papular or pustular form, we are justified in expecting an early attack of such symptoms as usually occur at a later period, which will probably be of an ulcerative nature ; while, on the other hand, if the secondary symptoms are mild in character, and readily amenable to treatment, we may with tolerable safety predict a light attack of the disease. Another point of importance in forming our opinion besides the character of the lesions themselves, is the length of time which elapses between the appearance of each separate attack, inasmuch as the longer the period the more feeble the action of the poison, and the less the chances of subsequent trouble. When the disease shows a tendency at the outset to assume a severe type, one train of symptoms may make their *début* before the last have disappeared, so that upon the same person we can distinctly trace the different stages of the disease, constituting what Ricord called the polymorphism of syphilis. This was very well shown in a patient under my care some time since, in whom the primary lesion was particularly obstinate, deeply ulcerated and serpiginous. In him the roseola amounted to almost nothing, quickly giving place to a papular eruption ; this in turn rapidly became pustular, and these pustules by rupture were covered with small soft crusts, so that I could trace a roseola, papules, pustules, and ulcerations at the same time. These symptoms all came on in spite of an active treatment.

Before going any further let us bear in mind that the usual duration of an attack of syphilis is about a couple of years, that is to say, where the disease is of average severity, and in that interval of time our patient may not go beyond the earlier stages of secondary syphilis, the attacks being repetitions merely of one another, more especially if the lesions be seated in the throat. This is a favourable sign, for it shows that the poison is not active, and has a tendency to remain, to a certain extent, local in

character ; this condition of things is still more favourable if each successive attack be lighter than its predecessor.

But perhaps our patient is not so fortunate, and the symptoms, instead of remaining in *statu quo* or receding, show a progressive tendency ; must the prognosis be necessarily unfavourable ? By no means. We will say our patient has gone through various stages until he is attacked with a psoriasis, iritis, or some of the milder ulcerative forms such as ecthyma, how shall we be guided in our opinion for the future ? In three ways : by the history of his preceding symptoms, by the local appearance of the lesions themselves, and by his general condition. If, upon questioning him, we find that his previous symptoms have been light, short in duration, amenable to treatment, and if, as in all probability happens, we further find that his present symptoms, if ulcerated, have no tendency to spread rapidly, or have been rather slow in appearing, we need not despair, the chances are still good, and even in cases where the disease has attacked important tissues, such as the bones or joints, and where ulcerations, if present, are deep, and show a tendency to spread, although the prognosis must be more guarded, it need not be adverse. I have seen several such cases recover from this disease, and remain well when seen some years after.

Up to this point we have considered merely those lesions which are comparatively superficial in character, and which have not attacked the more important portions of the body. As the disease progresses from the more superficial to the deeper seated tissues, the prognosis undoubtedly becomes graver in a proportionate ratio. The various syphilitic affections of the liver, kidneys, lungs, arteries, muscles, and nerves are all of them important in their relations to the prognosis ; those of the liver usually being the least grave. The affections of the kidneys in their earliest stages are comparatively of little moment, the danger lying principally in the tendency to Bright's disease, and the corresponding cachexia. In the latter stages, the tubules of the kidney may be cast off in a fatty, degenerate condition, and the substance of the organ filled with a lardaceous or gummy deposit. Under these conditions the prognosis is unfavourable. The more usual affections of the lung are due to the deposit of gummy material in a diffuse or circumscribed form, and where, as sometimes occurs, this deposit begins to break down, the case may readily be mistaken for one of phthisis, unless we have the history to guide us. But by far the most important and usual lesions are those of the encephalon and spinal cord. Here our opinion as to the future rests in a great measure upon the length and duration of the attack ; in the earlier stages when the disease appears to be, so to speak, more functional than organic, the prognosis is as a rule favourable, but where it has lasted for some time, has been attended with an old deposit of gummy material or accompanied by paralysis, the prognosis is usually unfavourable. In such cases of syphilitic paralysis the

patient may, indeed oftentimes does, improve under treatment up to a certain point, but he never completely recovers, and is particularly prone to relapse, each succeeding attack of course rendering the prognosis less favourable. Probably the larger proportion of syphilitic nervous diseases do not go beyond the congestive stage; where this is the case, treatment will be of benefit, but in the more chronic conditions treatment seems to be of very little avail. Where nerve tissue is destroyed, or where softening takes place, the prognosis is almost always unfavourable, but even here we must bear in mind that no matter how desperate the case may seem, we need not entirely abandon hope, as such patients will sometimes improve very rapidly under treatment, although they may not entirely recover. In paralysis of special nerves, as of the third, fourth, and sixth pairs, the prognosis is nearly always bad; where the former is the seat of disease, the patient seldom recovers permanently from the attendant ptosis. The future of these cases depends very much, however, upon the duration of the attack. An interesting case of this kind occurred in the service of my friend Dr. Roosa, at the Manhattan Eye and Ear Hospital, where the ptosis, a recent one, was associated with facial paralysis, and insufficiency of the external rectus, all three being due to syphilis. Dr. Roosa kindly showed me the case and asked my opinion. I gave him but little encouragement; still I advised the mixed treatment.¹ After several weeks of treatment, the ptosis got entirely well, even before his facial paralysis and insufficiency. This latter was remedied by an operation. A month after the treatment he returned to the hospital with a ptosis of the other eye, not complicated with any insufficiency or facial paralysis. He is again improving, but it still requires a strong effort on his part to keep the lid up for any length of time. What the result will be, supposing him to have a third attack, is a permanent ptosis, and that he will have another one is, I think, extremely probable.

The same is true of paralysis of the muscles of the eyeballs, and the longer the duration of the disease the less the chances of recovery.

One of the most serious and fortunately one of the least common of the results of syphilis is that known as "syphilitic cachexia," where it would seem as though the system becoming entirely saturated by the poison had lost all functional and vital power; the patient sinks slowly inch by inch in spite of all that can be done, and finally succumbs to some intercurrent disease, the severity of which is entirely disproportionate to the result. As may readily be conceived, the prognosis is very unfavorable.

In an early part of this paper, it was stated that age, constitution, and hygiene were important factors in forming our prognosis, and I can add but a few words as to the part that age plays in the disease. Old persons and young children, particularly the latter, suffer more severely than do

¹ Iodide of potassium in combination with some mercurial.

adults, and I shall show further on how large a proportion of deaths from syphilis occur in those under one year of age. If the child be born syphilitic, or if the disease appear within the first month of its existence, the prognosis is very serious; the longer the time which elapses between the child's birth and the appearance of symptoms, the better the chances. These symptoms usually occur within three months after birth; never, so far as I know, later than a year, and their gravity consists not merely in the presence of the external symptoms, but upon the coexistence of some internal visceral lesion, more particularly of the liver or peritoneum, and the consequent exhaustion.

In such as are debilitated, either from some hereditary taint, dissipation, or any other cause, the prognosis must, of course, be more guarded; but even here it is wonderful to see how rapidly they will sometimes recover from the disease. A curious fact, and one which I have often noticed, is, that in negroes syphilis usually goes on from bad to worse, in spite of all that can be done; why, I cannot tell, but the symptoms in them progress much more rapidly, show greater tendency to ulceration, and heal comparatively slowly.

The hygienic conditions of the patient must also be taken into consideration; those who from any cause are ill-nourished, or who live in ill-ventilated, over-crowded apartments, are much less amenable to treatment than where the patient has plenty of good food, light and air; this is explicable upon the ground that syphilis is in itself an exhausting disease, causing, in the earlier stages at least, changes in the blood corpuscles themselves.

Thus far the prognosis of syphilis has been only considered as it affects adults, leaving that of hereditary syphilis for a separate consideration, and here is where we meet with the most unfavourable results; the larger proportion of deaths occurring in children under one year of age.

As showing how largely the number of deaths in infants preponderates in the sum total of deaths from syphilis (adults and infants together), I have collected the following statistics from the reports of the Boards of Health of New York and Philadelphia:—

Deaths in New York from Syphilis.

	Total No.	No. under five years.	No. under one year.
1866	44	24	20
1867	76	58	57
1868	77	71	69
1869	77	63	61
1870	106	91	89
1871	142	120	113

Deaths in Philadelphia from Syphilis.

	Total No.	No. under five years.	No. under one year.
1860	9	6	4
1861	9	4	4
1862	21	16	11
1863	28	20	15
1864	25	17	16
1865	30	10	8
1866	22	12	11
1867	25	15	15
1868	43	23	13
1869	21	13	10
1870	23	12	10
1871	19	12	10

From this it would seem that nearly 80 per centum of the deaths from syphilis in the city of New York occur in children under 5 years, and nearly 60 per centum in Philadelphia. *More than it ought to be; more than it need be.*

Of the total number of deaths in children under 5 years of age, how many succumb at or before their first year? The result is equally sad.

From these figures, therefore, in New York the mortality of infants under 1 year of age is about 96 per centum of the total number of deaths from syphilis in children under 5 years, and about 80 per centum in Philadelphia. In view of these statistics, is it not worth while to consider some means for the prevention of this cause of infantile mortality? Sanitary science has done much to diminish the mortality of many diseases which formerly counted among the dead their thousands and tens of thousands; why not here? It is not upon the culpable ones that the punishment falls most heavily, but upon the innocent.

In a previous portion of this paper, I stated my belief that the larger proportion of persons suffering from syphilis recovered from their disease; but as it is impossible to obtain any statistics regarding the number of cases of syphilis which occur in any city during one year, the proportion of recoveries to those of incurables or of death cannot be given, but some approximation may be made by comparing the *total* number of deaths with those from syphilis. Such a table must of necessity be only approximative and imperfect, as many deaths probably occur which, although indirectly due to syphilis, are ascribed to other causes.

Mortality of New York.

Number of deaths during	1866,	21,206,	of which	44	were from syphilis.
" " "	1867,	23,443,	"	76	" "
" " "	1868,	24,889,	"	77	" "
" " "	(1869,	25,167,	"	77)	" "
" " "	1870,	27,175,	"	106	" "
" " "	1871,	26,976,	"	142	" "

Mortality of Philadelphia.

Number of deaths during	1860,	11,568, of which	9 were from syphilis.
" " "	1861,	14,468, "	9 " "
" " "	1862,	15,097, "	21 " "
" " "	1863,	15,788, "	28 " "
" " "	1864,	17,582, "	25 " "
" " "	1865,	17,169, "	30 " "
" " "	1866,	16,803, "	22 " "
" " "	1867,	13,933, "	25 " "
" " "	1868,	14,693, "	43 " "
" " "	1869,	14,786, "	21 " "
" " "	1870,	16,750, "	23 " "
" " "	1871,	16,993, "	19 " "

Unless these figures are incorrect, and I do not think they are so to any great extent, it is apparent that syphilis cannot be ranked as one of the *fatal* diseases, although it may be the cause of death in many instances.

From what has been written, the following conclusions may, I think, be reasonably arrived at:—

1st. That syphilis is a self-limited disease, and the patient, if blessed with a sound constitution, will, in the average of cases, get well, even if left untreated; but this course exposes to great and serious risk.

2d. That some general idea may be formed as to the future from the character of the earlier lesions; *this rule, however, is not absolute, as some cases do occur where the early stages are slight and the subsequent ones severe.* They are, nevertheless, I think, exceptional.

3d. That as the disease progresses, the prognosis is less favorable, more especially where important organs are attacked, such as those of the nervous or arterial systems; and,

4th. That in forming an opinion, due regard must be given to the age and general health of the patient, and in the treatment, attention must be paid, besides the proper use of specific remedies, to strengthening the patient, if debilitated from any cause whatsoever.

16 WEST 32D ST., NEW YORK.

ART. V.—*Cases Illustrative of the Use of the Ophthalmoscope in the Diagnosis of Intra-cranial Lesions.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences, and WM. THOMSON, M.D., Surgeon to Wills Ophthalmic Hospital, Philadelphia. (With a Woodcut.)

CASE 1.—Sept. 28, 1872, Dr. Wm. V. Keating was consulted by John M., æt. 20. Well developed physically; previously enjoyed excellent health, excepting occasional attacks of intermittent fever; has been for a

year past acting as clerk, employed from 9 A.M. to 6 P.M.; has been considerably annoyed during the past summer from constant exposure to the effluvia of a water-closet adjacent to his desk. He enjoyed perfect health until six weeks ago, when he was seized with uncomfortable feelings in his head, especially about the nape of the neck; a roaring sound in his ears. He designated these sensations as "apoplectic feelings in the head." The pain was paroxysmal in character, and at times very acute, sometimes producing nausea and vomiting; constant insomnia; had at times a slight *wavy* feeling in walking; bowels had been regular; urine healthy; appetite normal; no tendency to erections; never had any specific taint; never received any serious injury on the head. Had been recommended in New York to try saline purges two or three times a week, and take bromide of potassium. The affection had been considered as due to his peculiar age and hyperæmic condition of the brain. Finding no amelioration he came on to Philadelphia. In walking the streets he accidentally discovered that he had diplopia. The pulse ranged at that time 50 in the horizontal position, 110 in the erect; heart action regular, but weak; respiration 15; temperature 98° ; slight ptosis of the left lid; some vertigo when suddenly assuming erect position; is always more comfortable lying down; position of head as to body inclining to opisthotonos; has an anxious, dull expression of face, with slight convergence of left eye. The above symptoms continued without much variation. On the 6th Oct. found him in bed, having suffered agonizing pain the previous night and vomited large quantities of bile; vertigo and increase of "apoplectic feelings" forced him to keep his bed. An ophthalmoscopic examination was made by Dr. Dyer, with the following results:—

There was homonomous diplopia; separated images at eighteen feet brought together with prism of 25° ; the external recti were not paralyzed entirely, for either eye could be turned outward by an effort; slight ptosis of left lid; pupils dilated and sluggish; vision = 1 (perfect); no myopia or hypermetropia. On examination with the ophthalmoscope a typical case of "choked disk" presented itself on both sides. The optic nerve was swollen, and careful measurement showed that it projected into the eye .68 millimetre; the eye being emmetropic, the apex of the papilla was best defined with $+ \frac{1}{15}$.

The general number and course of the retinal vessels were normal. The arteries were rather small, and throughout their length presented the appearance of breaks in the continuity of the columns of blood, for a short stretch the vessel looking as if empty, followed by a stretch which was normally filled, then an empty portion, and so on to the end. The veins presented the same alternating stretches, but in a more marked degree, the contrast between the apparently filled and empty portions being more striking. The veins were tortuous and somewhat dilated, and pressure on the eye did not alter these appearances; the fundus was otherwise normal.

Treatment seemed to have no effect; at times would seem quite comfortable, with very little pain in the head, but always preferring a recumbent position. On 13th, Dr. Mitchell was called in consultation; proceeded to push the iodide-of-potassium treatment. Pulse now ranged 48 in recumbent position; 120 in the erect; temperature 98° .

16th. Has had more nausea and vomiting, and suffers from violent pain in the head and constant insomnia. Decided to give small doses of calomel and endeavour to produce ptyalism; opium suppositories at night.

18th. Calomel allayed nausea and vomiting, has had refreshing sleeps. Both papillæ more prominent, the anterior walls of the vessels being seen with $+ \frac{1}{10}$, showing an elevation from the fundus of 1 millimetre.

Between the 24th of October and the date of death, Dr. Mitchell examined the fundus of each eye repeatedly. The disks and vessels remained unchanged, but the acuity of vision certainly declined below the normal.

Passed a restless night; violent pain in the head; pulse in the recumbent position 120; great heat of skin; some numbness in the left side; temperature A.M. 100°, P.M. 101°; bowels costive; heavy deposit of urates.

22d. Symptoms have ameliorated; pain in the head less; pulse down to 50 in recumbent position; no impairment of intellect; no paralysis of motion or sensation. From that date to the 2d of November there was so much improvement in general symptoms as to afford hope that the disease was yielding to ptialism.

Nov. 4th. Ptialism complete; all the symptoms better, save the diplopia and ptosis, which have never abated.

6th. Patient worse; has a well-defined numbness over left side; skin hot; pulse 120 in recumbent position; temperature 101°; seems very despondent, and has all his apoplectic feelings increased, with violent pain in the head and constant vomiting.

10th. Much better; slept well; temperature 98°; pulse 76 in recumbent position; whenever he rises, has a wavy feeling in his head, and his gait is uncertain.

19th. Passed a very bad night; vomiting all night; agonizing pain in the head; face much flushed; temperature 98½°; pulse 50; anxious expression of face; convergence of eye much increased.

25th. Symptoms unchanged; had a well-defined numbness over left side that morning, which continued for fifteen minutes. About 6 P.M. sat up in bed to take some nourishment; asked to have his head put beneath the pillow; turned on his side, and suddenly died with symptoms of syncope. Urine constantly examined, and never gave any indications of albumen.

The chief and permanent symptoms through the case were violent pain in the head; roaring in the ears; occasional nausea and vomiting; diplopia; ptosis of left eye, with strabismus; uncertain gait, and wavy feelings in erect position, with slight opisthotonos; pulse ranging 50 when recumbent to 110 when erect. Bromide of potassium *invariably* from the commencement of the attack when taken increased what he called his apoplectic feelings.

Autopsy.—Body not emaciated. On opening the skull the basilar membranes were found seriously altered, apparently by simple inflammation, being opaque and irregularly thickened, especially about the middle line and directly in front of the pons. The membranes covering the cerebellum were rather thickly dotted on the left side with inflammatory deposits. On the right there were but two such spots, and on both sides these were near to the central fissure.

Between the upper surface of the cerebellum and the dura mater (whence it grew by a pedicle about four lines wide) lay a tumour which had totally obliterated the convolutions of the cerebellum below it, and had indented the organ so as to leave in it a depression one-fourth inch deep even after the tumour had been removed. This tumour was 2½ inches long and 1½ wide and 1½ thick. The surface of the cerebellum on which the mass rested was slightly softened and its membranes inflamed and thickened, while several loose bands of lymph connected them on both sides at the anterior portion of the cerebellum with the cerebral coverings. The interior of the brain was not otherwise altered, and the larger vessels were not diseased. The ventricles were considerably distended by clear serum.

Remarks.—The basal inflammation accounts, as I think, for the lesion of the second and sixth nerves. The downward cerebellar pressure could not, because it would have been too much distributed, or must have affected other nerves more gravely. It could not have so palsied the sixth without more than merely just disturbing others as it did the eighth. The death may have been due to sudden shifting of the mass backwards so as *suddenly*

to compress the bulb, but 'sudden death without new lesion is common enough in cerebellar and other brain tumours.

The vomiting, the occipital pain, the disturbance of ocular motion, and finally of vision, with general feebleness without emaciation, and the vertigo, are all symptoms found in cerebellar tumours. The locomotion defects were not marked, and it is curious that with so much serum with meningitis there should have been no mental disturbance.

Amaurosis is commonly mentioned as one symptom of cerebellar tumours, but it occurs also in other tumours (intra-cranial), and may be often due, as was the lessened acuity of vision here, to swollen disks, lasting so long as to compress and injure the nerve fibres in their passage.

The case presented no symptoms related to the generative organs.

Microscopical Examination, by Dr. Thomson.—A portion of the posterior part of each eyeball, containing the papilla, together with the optic-nerve as far back as the apex of the orbit, was removed; and on inspection a swelling 5 mm. in diameter, and 1 mm. high was observed at the intra-ocular extremity of each nerve. The central vessels of the retina were indistinctly seen until they reached the margin of the swelling where they presented their usual appearance. These specimens were immediately placed in Müller's fluid, together with a portion of the tumour, which proved to be a small-celled sarcoma.

When one of the specimens had been sufficiently hardened, horizontal and transverse sections were made, one of which through the centre of the papilla, stained with hæmatoxylin and mounted in balsam, is represented in the wood-cut, enlarged about 15 diameters. The diameter of this disk at the choroid is $1\frac{1}{2}$ mm., and the apex of the swelling rises $1\frac{1}{2}$ mm. above it, whilst the extent of the engorgement on either side into the retina amounts to 6 mm. transversely. Behind the cribriform fascia the nerve suddenly expands to 3 mm. in diameter.

With a low power the swollen portion of the papilla is found to consist largely of bloodvessels so distended with red corpuscles as to resemble an injected specimen. Upon tinting with carmine little or no differentiation of tissue is observed, but upon the use of logwood the older or formed parts, as for example the sheath of the nerve, the sclera, and the nerve fibres, assume a lavender hue, whilst the granular layer of the retina, and the nuclei of the coats of the bloodvessels, and of the entire connective tissue are stained a deep purple. The course of each capillary vessel becomes apparent by the stained nuclei in its walls, and it is at once evident to the observer that the vascular supply of this disk is pathological, and that the enormously multiplied vessels contribute largely to the swollen condition of the papilla.

On teasing out a portion undoubtedly pathological, and using for its examination a No. 9 immersion system of Hartnack, one finds the axis cylinders and the processes of the neuroglia undistinguishable and tinted alike of a lavender hue, while the nuclei of the neuroglia, oblong, oval, and round in shape, and of varying size, are recognized by their deep purple color. No degeneration of the axis cylinders could be found. No change further than those above described was observed.

On a comparison of the sections of this nerve with those tinted and treated in the same manner and believed to be normal, it is evident that

the purple nuclei are infinitely more abundant in the one than the other, not only in the swollen intra-ocular end of the nerve, but at the cribriform fascia, and throughout the entire nerve-trunk behind it, as far as it was examined. In the accompanying wood-cut an effort has been made to dis-



Magnified 15 diameters.

nate the lines formed by the tinted nuclei that lie thickly strewn in the interfascicular spaces of nerve-bands as they pass through the cribriform fascia, where they are so abundant that they give a purple hue to the entire field as observed with a low power. Whether these tinted parts are emigrant cells undergoing development, or the result of a proliferation of the neuroglia proper of the nerve, involves the whole mooted question of inflammation, and must remain undecided for the present, but it would seem evident that this entire nerve has undergone a pathological change, and that it is at present in the condition of vascular engorgement and hyperplasia of its connective tissue.

The sheath of the nerve and the inter-vaginal space appear normal, and the changes in structure seem confined to the nerve itself.

CASE 2.—M. C., female, æt. 21, of a healthy family, was a vigorous person but subject to severe headaches, especially just before her periods. For a year previous to her death she had occasional double vision. October 7, 1872, she had an attack of sore throat, with aches in all the limbs and in the back and head. Little was thought of this as she had taken excessive exercise the day before, and as she became unwell on the 8th: on the 10th, her headache in place of lessening was worse, and her friends noted that her eyes squinted slightly at times and looked dull and lifeless. Meanwhile, on the 11th and 12th, the cephalalgia and sense of vertical pressure on the head were described by her as unendurable. She was still about, but would sit upright with the eyes fixed. She said any movement hurt her and that the eyes especially were pained by motion. On the 14th, a hypodermic injection of morphia was given with present relief of pain but after-effects in the way of nausea and a sense of increased pressure on the

brain. Up to this time and indeed until near the end of her illness, it was regarded as neuralgic and was treated chiefly by quinia and morphia. On the 14th, the filling of a tooth which proved sore from an abscess in the fang was removed without relief. She was thenceforward kept more comfortable by hypodermic injections twice a day; not over $\frac{1}{4}$ grain being used on each occasion. During the week she suffered intense pain especially at night, accompanied with more or less fever, with at all times a tendency to keep the head thrown back by a pillow under the neck. On 19th October, she felt better, but spoke still of the horrible sense of weight on the head, and up to this time there had been no delirium. At 10 P.M. the usual injection of $\frac{1}{4}$ grain was given. At 8 A.M. on the 20th, she was asleep but looked pale and breathed heavily and was sweating profusely. At 10, she seems to have had a slight spasm. At 12, she became slightly unconscious but recognized some of those about her. Her power to swallow was thenceforth impaired and she passed into a state of profound coma. On the 21st, the neck behind the ear became remarkably red and swollen, and on the morning of the 22d October she died quietly.

As the death took place in Europe the body was embalmed, as it proved most inefficiently, by throwing into the stomach and rectum large quantities of dissolved chloride of zinc. Six weeks after death Dr. W. W. Keen was requested by Dr. Mitchell to make an examination of the head with the hope that some explanation of the symptoms would be found.

Some of the tissues were decomposed and the brain itself quite diffuent, but it was still plain enough that all the upper and anterior portions of the membranes covering the cerebral hemispheres had been intensely inflamed and the basal membranes offered like appearances but less distinct in character. The brain changes were of course undistinguishable. From the lower anterior edge of the right parietal bone projected an exostosis $\frac{1}{4}$ inch thick, an inch long, and half as wide. As many as forty other exostoses, all of them small (1 or 2 lines wide by 1 to 3 long) grew from the various cranial bones on the arch and sides but not on the base, while the sides of the longitudinal sinus were plated by long flat irregular masses of bone which passed $\frac{1}{4}$ inch downward into the great fissure below the sinus. These, of course, grew from the dura-mater. Some of the soft parts about the head were greatly altered, others were wonderfully preserved. Thus on carefully removing the back of the eyes I found that the optic disk projected clearly and distinctly above the retina. It was quite firm and hard, and there must have been not only œdema and congestion but such proliferation of its connective tissues as to leave it thus enlarged and prominent despite the changes I have described.

The above I have ventured to add to this collection of cases of brain tumour because of its rare interest. It was regarded by those in attendance as a case of congestion of the base of the brain, but it proved to be an example of exostoses which must have been the growth of years, and which during times of congestion were more and more severely felt by the brain on the limits of which they intruded. At length, a sharp influenza occurring at a menstrual period proved sufficient to raise this occasional irritation to the grade of inflammation. I was amazed to find the right disk (the only one examined) as I described it.

Remarks.—A high degree of very painful uncertainty as to the cause of the death of this lady remained in the minds of her friends, and was dissipated only by the post-mortem examination made so long after her decease.

The examination of the fundus by the ophthalmoscope in her last illness would have given an early warning of her danger, and would have prevented the suspicion that death had followed upon the use of therapeutic agents. Indeed, it is not improbable that, months previous to her death, when she first complained of diplopia, an examination would have revealed the condition of choked disk and given the note of alarm to herself and her friends.

CASE 3.—Dr. Mitchell was asked by Dr. Hamilton in May, 1872, to see Mary C——, æt. 16 years. Dr. H. had attended her through a recent attack of typhoid fever, which presented the unusual symptom of more or less steady pain in the head throughout the attack. She was convalescent and afoot about three weeks, when she began to complain of a frontal headache, and at times of rheumatism in the back of the neck. Recently the headache had increased, and she complained of noise like falling water in the right ear; found her lying in bed, flushed and feverish; pulse 110; respiration 30, and interrupted at brief intervals. The fever was worse at night, and she had had for three days nausea, at intervals; the scalp over the right eye was œdematous, and elsewhere was sore; sudden movements increased her pain notably; the chest presented evidence of slight bronchitis, but there were no cardiac lesions; the right eye had drooped a little, and there was, at times, double vision, with loss of power over the right internal rectus, and the pupil was a little dilated and sluggish. The left eye-ground was nearly normal, with, perhaps, too much colour in the disk, as compared with the right, which was somewhat swollen, so that the summit was seen clearly with + 16 of Loring's ophthalmoscope. It was grayish and hazy, and the vessels leaving the disk looked as if covered with ground glass. There were no hemorrhages, old or recent, and the remainder of the eye-ground was, perhaps, less red than that of the left eye. On the third day after, the headache was intense; pulse 120; breathing broken, and the fever high. Two days later the eyes were unaltered, save that the muscles controlled by the third nerve were totally palsied on the right side, and partially on the left; the acuity of vision was not much impaired. The disks presented the same appearances ten days later, just before death.

On the fifth day her deglutition became impaired and the delirium, which was previously rare, increased by degrees, while the headache, flush, and fever grew worse; no other notable changes took place; but there was simply a slow increase in the gravity of all the symptoms, until at the seventeenth day she could not swallow at all; the constipation became obstinate; coma set in, and she died on the twenty-first day.

The diagnosis was sufficiently clear as to the presence of meningitis. I believed also that there was a tumour, and that it was probably near the base of the brain. Its nature was made more clear by the family history which Dr. Hamilton thus detailed:—

I. M. C. her father died of "chronic cough," æt. 61; his wife of consumption, æt. 52.

Their sons, W. C., died æt. 30, of consumption; P. C., with symptoms of meningitis, æt. 23.

Mrs. M. C. F. died of phthisis, æt. 34; I. M. C., æt. 46, of abscess of the lung and paralysis.

Eliz. C., daughter of the above named, W. C., died æt. 18 of phthisis.

Mary C., her sister, was our patient; there are still alive three other children; one is healthy, one is hysterical and feeble, one is tubercular, and this history left little doubt as to the presence of tubercle in this case.

Autopsy.—The body not wasted; the brain healthy, except at the base, where the membranes were matted together, and thickened by tubercular meningitis. One large mass, the size of a walnut, was imbedded in the anterior and lower part of the posterior cerebral lobe. So coarse was the lesion that I wondered how the other nerves than the third could have escaped; yet the fourth and sixth were not affected in any marked degree. The optic disk of the right eye was removed and preserved for examination. It was distinctly swollen. The details of its microscopic study will be found below.

Remarks.—The diagnosis of meningitis in this case was easy; that of tumour was less reliable, although it also proved to be correct. I was struck, at my first visit, with the curious odour of the breath, which is nearly always peculiar in cases of meningitis, and I find it alluded to in many of my notes of cases of cerebral disease.

Microscopical Examination of Optic Disk.—One inch and a quarter of the optic nerve with portions of the tunics of the ball surrounding the disk were placed in Müller's fluid, hardened and cut transversely and horizontally. In the removal of the specimen, the retina was so lacerated as to render an accurate description of the dimensions of the swelling impossible, but its apex is one mm. in front of the cribriform fascia.

It is well known that tinting with carmine is unsatisfactory after the hardening has been effected by chromic acid, and the sections when stained with carmine gave little evidence of any pathological condition; but upon the use of hæmatoxylin it became evident that the nuclei of the neuroglia were infinitely more abundant than in normal nerve, and it seems evident that this entire nerve has undergone a hyperplasia of its connective tissue.

CASE 4.—In the *Philadelphia Medical Times*, Nov. 16, 1872, will be found the report of a "Fatal Case of Purulent Aural Catarrh," by Dr. Harlan, which becomes of interest in this connection, since the diagnosis of intra-cranial inflammation was rendered more certain by the use of the ophthalmoscope. Dr. Thomson saw this patient a few days before death, and assisted at the autopsy, and can confirm Dr. Harlan's description of the condition of the disks in every respect; they were both much swollen, with obscured margins; their arteries were contracted and veins engorged. The rest of the fundus was normal, and its refraction, as determined by the ophthalmoscope, emmetropic, whilst the highest point of the swollen disk could be seen with a $+ \frac{1}{3}$, indicating a swelling of this part above the fundus of 1.5 mm. The acuity of vision was not accurately determined, but she was able to read small type fluently.

After death, an abscess containing an ounce of pus was found in the middle lobe of the left side of cerebrum; the petrous portion of the temporal bone was found carious, and covered with a thick deposit of lymph, and the membranes of the brain were extensively engorged on that side. It was found impossible to obtain the disks, but the optic commissure was placed in Müller's fluid, hardened, cut into thin sections, stained with log-wood, and mounted in balsam. In comparing these specimens with those taken from the optic commissure of a man who died from a traumatic

cause, and similarly treated, it seems evident that the bloodvessels are more numerous, and in any given field of the microscope, the stained nuclei much more thickly strewn through the tissue of the one than the other. There is no abnormal appearance in the intra-vaginal space, nor do the nerve fibres appear to have undergone any change.

CASE 5.—D. L., clerk, æt. 31, several years ago was intemperate and 18 years back had chancre and subsequent sore throat, not certainly of syphilitic nature; has lost most of his hair, following an attack of typhoid fever eight years since; has had no skin disorders and has no present evidence of syphilis; is married and has two healthy children, and of late years has been a steady man. Late in October he consulted Dr. Mitchell, having suffered for several weeks with pain over the left eye. He said that he had often had headaches, but that this was a new pain and was nearer the skin. The supra-orbital nerve was found tender at its exit, and the pain seemed to run upward in its track; digestion good; heart normal as well as the lungs, and the teeth were sound. The pain came on daily about 10 to 11 A.M., and grew worse up to bed time, causing unilateral flushes in the evening. The disorder seemed to be a quotidian neuralgia, but after six treatments with galvanism Dr. M. found that each of them either augmented the pain at once, or within a short time. This rarely occurs, and when it does, should lead us to suspect the existence of some organic cause of trouble. About this time Mr. L. ceased his visits. November 19. He came back in a condition which explained the probable cause of his disease.

The pain was as severe and was still so acute at night as to prevent his sleeping. The type had changed, the supra-orbital nerve was still tender, but the pain in its track had ceased, and in place of it there was a dull deep ache in the left temple and at the frontal prominence. The scalp in these regions was tender and at times slightly cedematous; the left lid was partially palsied; the pupil slightly dilated, and the left internal rectus muscle insufficient, causing squint and varying amounts of double vision; the conjunctiva was diffusely but not deeply reddened, and the eye-ground and disk were absolutely normal on both sides and at repeated examinations; hearing, touch, taste, and smell normal; pulse 90° ; temperature on three days at 3 P.M., he having walked to my office, 99° F. He was placed on iod. potass. five grs. thrice a day, rising in a week to one $\bar{3}$ daily.

28th. Pain concentrated on the frontal prominence; pupil smaller; ptosis and squint as before; acuity of vision normal.

Dec. 4. Much worse; pain steady day and night; blisters with morphia $\frac{1}{2}$ gr. dressings daily, and these failing, $\frac{1}{4}$ gr. hypodermic injections, twice a day, with leeches over point of pain on alternate days.

16th. Much the same. There is now a new point of pain over the left outer canthus; all the muscles controlled by the third nerve are now palsied; pupil dilated; eye-ground still normal; ordered mercurial inunction in arm-pit twice a day, and bichloride of mercury $\frac{1}{12}$ gr. thrice a day.

21st. Conjunctiva diffusely congested; eyeball projects slightly; left disk is redder than that of the right side; memory failing; has become emotional and at times cries with the pain which is now higher up above the edge of the hair and only in this one place. For some days the ice-bag (dry-cold) has been used over the seat of pain, but as it has always been unpleasant, and he constantly removes it unless watched, it is discon-

tinued; urination difficult; bowels constipated; gums slightly sore. The mercurials were laid aside, and at times afterwards resumed so as to keep up the mercurial impression, and about thirty grains of iodide of potassium were given daily. Bromide of potassium seemed to have the effect of increasing his headache.

24th. Very feeble; nocturnal fever; the temperature usually 100° F., A.M., and rising to 101° , to 103° at night; slight nausea at times; is now in bed all the time and too weak to stand: the eye remains as before; about this time he began to have more distinctly a slight œdema of the left frontal region. From this time he failed steadily; the mind wandered although he had brief but perfectly lucid intervals, and then the pain was less, a day or two later he became violently delirious, and had one short and slight attack of spasmodic movement in the right arm and hand, after which he fell into a comatose state and died quietly, January 11th.

The examination was limited to the head, as I was not allowed to open the other cavities.

Autopsy.—Dura mater thickened and velvety appearance of inner surface observed; pia mater slightly opaque, with well marked œdema and underlying effusion, and considerable venous congestion, together with small patches of lymph on upper surface of pia mater; meningitis on supra-orbital plate (left) and to a slight extent along left side of longitudinal sinus; none at the base. On removing the brain a small body the size of a pea, of reddish-brown colour and firm consistency, was found attached to the dura mater immediately behind and to the left of the left posterior clinoid process, and just above the cavernous sinus, touching but making no pressure upon the internal carotid artery. The track of the left third nerve was apparently directly under the tumour.

Both middle fossæ of skull were roughened with many spiculæ of bone and the upper surface of basilar process was carious.

On removing the fundus of left eye the optic nerve was seen to be cupped, but no choking of the disk was observed.

Microscopical Examination of the Disk.—The optic disk with a surrounding portion of the tunics of the ball and one inch of the optic nerve were immediately placed in Müller's fluid and hardened; sections were then made, tinted with logwood and examined after being mounted in balsam. There is no swelling of the disk; no increase of the number of vessels, and no other pathological change. In the horizontal cuts through the disk, the retinal fibres part slightly in advance of the cribriform fascia, and pass to the right and left, having at the margin of the disk, and as far as they can be seen, the normal appearance. With a high power the nerve behind, at, and in advance of the cribriform fascia presents normal appearances; there is no increase of the nucleoli; no evidence of hyperplasia of the neuroglia, and no degeneration of the axis-cylinders.

Remarks.—On closer study after its removal, Dr. Bertolet found that the tumour must have grown beneath the nerve, which, as it increased, became spread out upon its upper aspect. The growth was a psammoma, the angiolithic sarcoma of Ranvier, and has been described by Dr. Bertolet in the Proc. of the Phil. Path. Soc.

This case seems remarkable for various reasons. It was no doubt syphilitic, judging from the history, the exostoses, and the basal caries, but I am not aware that the "sand tumour" is especially related to this constitu-

tional vice. I suspected the presence of a large growth in the anterior left cerebral lobes, causing inflammation on the third and fifth nerves, and causing pain by involving certain of the meningeal branches of the fifth nerve on their passage, the pain being referred to their terminal distribution. Such I believe to be a common cause of meningitic pains remote from the region directly disturbed. In fact there was meningitis, here and there, and a small tumour, mischievous to one nerve only. Considering the condition of the bones, it is surprising there was so little inflammation or effusion, yet there had been enough of mischief to kill, but absolutely no swelling of the disk up to three days before death.

CASE 6.—J. Q. L., a merchant, æt. 56, resident in a neighbouring city, married, and the father of five healthy children. Although of gay habits in early life, he does not know that he ever had any specific malady, such as syphilis, while at no time has he been a hard drinker. Of late years he chewed and smoked tobacco, but not to excess. He has had no causes of anxiety; is in easy circumstances, and of unblemished blood. Has at times an obstinate mucous discharge from the nose and throat. In 1869, he had at times a little vertigo, without nausea. In 1870 these lessened, and he began to have pain on the top and back of the head behind the right mastoid process, at first intermittent, recurring in the evenings, but absent for many days, and then present every day for a week or more. In Dec. of 1870 and Jan. of 1871, the pain became more severe and more constant, and at length terrible, behind the ear, especially at night, when the torture grew so excessive that he lost all control of himself and wept like a child. The neuralgia was confined to the left occipital region and ran up on to the scalp, but troubled none of the anterior branches of the fifth nerve. With it, when most grave, there was a symptom which marked the height of the attack, and which Dr. Mitchell thus far has seen only in cases of specific neural pain. On the scalp, at the upper limit of the painful region, arose swellings of the skin about two inches in circumference, and at least a quarter of an inch in height. They were red and excessively tender. During January, 1871, he began to sleep badly, remaining awake sometimes for two or three nights; while his memory failed rapidly, his power of thinking became enfeebled, his countenance assumed an imbecile appearance, and he became as emotional as an hysterical girl. Meanwhile the pain grew worse, and early in February he began to have twitching of the *left* thumb and of the interosseal muscles. Very soon they attacked the arm and forearm also, and then extended to the face, after which the attacks returning daily, or many times a day, affected his consciousness, and always beginning in the thumb ended in a bilateral fit, with foaming at the mouth, tongue-biting, and subsequent coma. On recovering, he usually saw double, or had subjective ocular delusions as to the furniture being in motion, a kind of protracted giddiness. I saw him in many of the lighter attacks, which in April and May took the place of the graver fits. There was one most interesting fact. During the fit the muscles of the outer ear moved during the convulsion, and on inquiry I learned that he had the power to move the ear at will. Even the muscles of the tragus and anti-tragus could be seen to twitch. In April, and when I saw him in May, the left hand was liable to constant twitches, but there were then no severe fits.

Dr. Mitchell saw him first on May 20th, and made these notes of his hapless condition. He was in bed moaning with the nearly steady pain of his neuralgia; his mind and memory were quite useless, and he wept at the least cause for emotion. He slept ill or not at all, and had daily attacks of a convulsive nature, rarely to loss of consciousness, and usually on the left side and in the left face. He had incomplete left hemiplegia, and could not walk at all; there was no loss of sensation nor nausea, and no heart disease. Pulse ranged from 90 to 100 in the morning, and 110 to 120 at night, with slight fever and nocturnal rise of thermometer; 99 in the morning, 101 at night; no albumen in urine; bowels constipated.

This seemed to me indeed a hopeless case, although, if it were of specific origin, as I suspected it to be, there was still a chance of relief.

24th. He began to take twenty grains of bromide of lithium thrice a day. A blister was put behind the right ear and kept open. On the second night he slept five hours, and still longer next day.

28th. Continuing the bromide he took $\frac{1}{15}$ th of a grain of corrosive sublimate in pill after each meal, and iodide of potassium in rising doses, which in a week reached to $1\frac{1}{2}$ 3 a day.

The progress was thenceforward amazing; the fits ceased; the palsy lessened day by day; the pain left him; memory and power to reason came back; he slept well and steadily, and ate eagerly.

A summer in the mountains aided him greatly, and in November, 1871, he could walk a mile, the foot dragging a little. The hand still twitched a little, especially when he was excited; and the flexors of the arm had become somewhat contracted, so that, owing to weakness and this cause, he had but little use of the hand. A long galvanic treatment of the shortened muscles, with Faradism of their opponents, failed, as it does usually, to relieve this trouble, nor was a course of *massage* of any greater value.

Ceased to use the iodide in January, 1872; but twice having ventured to lay aside the bromide, he was forced to return to it by the occurrence of a unilateral convulsion. He is now well, save for the permanent partial loss of muscular power in his arm. He takes steadily forty grains of bromide of sodium daily.

Remarks.—I have little doubt as to the specific nature of this case—in fact what may be called the therapeutic diagnosis would be almost conclusive. Yet save for a slight roughness of skin and the persistent mucous discharges—sometimes offensive—there was no symptom to support this belief, no bone or skin troubles at any date; yet this is just what we see many times in syphilitic neuroses, which seem most apt to occur in persons who have had no cutaneous or other evidence of constitutional disease. The unilateral spasms without unconsciousness by degrees assuming the common type of epilepsy also agreed with the habits of a specific disorder of the brain.

I wish also to call attention to the curious swellings like urticaria, which followed the attacks of pain; these also, according to my experience, are seen only in cases of pain in the head, probably due to local meningitis and of specific origin.

I have never before noticed the convulsive movements in the muscles of the auricle and in those attached to the ear, but possibly this may be more

common than I supposed it to be. Since making this observation I have discovered that even the intrinsic auricular muscles of the tragus and anti-tragus may, in many persons, and even in the aged, be called into action by induced or galvanic currents, which makes it probable that they have some distinct functional use and are habitually in action, since otherwise it seems hardly conceivable that they could retain their myability. I presume that in this case there was a syphilitic growth in the postero-lateral brain region with a local meningitis, the extent of which does not admit of exact definition.

The eye symptoms are described by Dr. Thomson, who saw the case in consultation.

On June 7, a careful ophthalmoscopic examination of both eyes was made. Acuity of vision of each eye was unimpaired, and with the glass which corrected his optical defects he was able with either eye to read $1\frac{1}{2}$ Snellen. Both pupils were then fully dilated and the accommodation paralyzed with atropia. With the mirror the refraction was determined to be hypermetropic $\frac{1}{20}$ at the region of the macula. The media were transparent, and each retina was perfectly normal in appearance. The disks both presented the characteristic signs described by Mr. Allbutt as ischæmia papillæ or "choked disk," and the chromo-lithograph given as the frontispiece of his volume on the "Use of the Ophthalmoscope in Diseases of the Nervous System," might have been made from the case now under consideration, so faithfully does it represent the appearances. Each papilla projected into the vitreous humour so that its highest portion could be seen with a $+\frac{1}{7}$, showing by a calculation of the difference between the refraction of the fundus and the apex of the disk, an elevation of the latter of about 1 m.m. The diameter of the swollen papilla was more than twice that of a normal disk and its edges were ill defined. The arteries were smaller than usual, but the veins were greatly dilated, very tortuous, and here and there hidden from view in the swelling, at the margin of which they seemed to fall from the view of the observer armed with $+\frac{1}{7}$ and became very indistinct, to reappear again perfect in definition with $+\frac{1}{20}$ on the other portions of the fundus.

This gentleman had been almost abandoned as a hopeless case of softening of the brain following apoplexy, but the mirror dissipated this idea, since clinical experience shows that choked disk seldom or never results from hemorrhage, or acute or chronic softening of the cerebral substance, whilst by its aid also a theory of the disease was formed which led to the use of therapeutic measures which were followed by brilliant results.

On July 22, the eyes were again examined, and with $+\frac{1}{20}$, which corrected his hypermetropia, his acuity of vision was $\frac{1}{1}$; there was no swelling or appearance of exudation about either disk; the outlines of the papillæ were distinct; the color was pink; there was no evidence of any atrophic change, and the bloodvessels had resumed their normal appearances.

It would manifestly be impossible in this paper to do full justice to all the observers who have written on the connection between intra-ocular changes and the diseases of the brain, and the reader is referred especially to the valuable work of Mr. Allbutt, *On the Use of the Ophthalmoscope in Diseases of the Nervous System*; to the valuable contributions of Mr. Hughlings

Jackson, and to an interesting and well-illustrated paper by Pagenstecher in the Royal London Ophthalmic Hospital Reports, for November, 1871, for a full discussion of the subject. It has been practically established however, that the condition now known as "choked disk" may become, as in Case 1, the chief if not the only symptom by which a serious brain lesion may be recognized by the examination of the fundus of the eye; that this form of neuritis may exist without the slightest impairment of vision, and that the ophthalmoscope becomes of imperative use in treating nervous diseases, and should be employed in the examination of all cases as a part of the routine, as advised by Mr. Hughlings Jackson, "whether the patient complains of any defect of sight or not."

That this apparently rude lesion of the optic nerve should exist for months, perhaps, and pass off under appropriate treatment without causing any loss of visual power, as in Case 6, led to the belief that a mechanical cause, and not a true local inflammation of the disk, would be found to account for the swollen and congested condition of the papilla; and this view was the one propounded by Von Græfe in a classical paper published in 1866, in which he maintains that any increase of intra-cranial pressure retards the circulation in the cavernous sinus, then in the ophthalmic vein, and finally in the central vein of the retina, which, passing with the optic nerve through the dense and unyielding sclerotic ring, is there compressed and in part strangulated, and that aided by the "multiplying action of this ring," the obstruction to the return of the venous blood is able to induce the œdematous and swollen condition of the papillæ. A second theory, based likewise upon the increased pressure within the cranium, has been advanced by Schmidt, who believes that fluid is forced from the arachnoid cavity along the inter-vaginal space of the optic nerve, and into the canal system of the lamina cribrosa, and there gives rise to the swelling and congestion. Benedict gives yet another explanation, and ascribes the swelling to a morbid innervation of the vaso-motor system of nerves, which causes a hyperæmia with changes in the nerve-fibres of the disk and retina, induced by the reflex irritation of a morbid process anywhere in the brain.

Against the last theory may be adduced the clinical facts set forth in Case 5, where the symptoms previous to death would indicate a high degree of irritation, evinced by severe pain and violent delirium, and where the autopsy revealed rude changes of the membranes and caries of the basilar process, but where the disks retained their normal appearances both before and after death, and presented, even under microscopic examination, no signs of disease. So far as the truth of Schmidt's views are concerned, other competent observers have failed to convince themselves of the existence of the system of canals in the lamina cribrosa, although a dilatation of the inter-vaginal space has been frequently described; whilst the idea of Græfe is made doubtful by the study of the anatomy of the veins,

which proves, according to Sesemann, that the anastomoses between the ophthalmic vein and the facial are so abundant that no great retardation of blood could result from pressure upon the cavernous sinus, so long as the facial veins are patent. In spite of this objection it would appear from a study of the cases here presented, that an inflammation more particularly of the meninges about the base of the brain, whether increasing the intracranial tension or not, is competent to produce an engorged condition of the optic papilla which becomes a most valuable diagnostic sign of lesion of the brain, whilst vision may for an indefinite time remain perfect; but that a true neuritis may ensue, indicated in the specimens described, by an increase of the bloodvessels, and a hyperplasia of the connective tissue of the nerve, which would eventuate in time in atrophic changes with partial if not entire loss of sight, accompanied by a shrunken and pallid condition of the disk when examined by the mirror, and by marked cicatricial changes under the microscope after the death of the patient.

For the ophthalmic surgeon this condition of choked disk has assumed a practical aspect, since no less an authority than Dr. Wecker has proposed for its relief to incise the sheath of the optic nerve with an instrument which he exhibited and described to the members of the International Ophthalmological Congress in London, in August, 1872; and in the eighth volume of the Reports of Saint Bartholomew's Hospital, will be found a history of a case of optic neuritis treated after this manner by Mr. Henry Power, in which the improvement was so slight as to enable the patient to distinguish day-light only, whilst no change whatever in the appearance of the disk could be observed by the ophthalmoscope after the operation: the futility of this might be safely predicted from an examination of the specimens above described, since under the tinting with logwood, they appear to present evidences of overgrowth of the connective tissue throughout the entire nerve-trunks, from the papilla to the optic commissure, and to illustrate the following description by Rindfleisch:—

“Non-inflammatory differs from inflammatory hyperplasia of connective tissue by its slower rate of progress. A hyperæmic dilatation of the vessels is the starting point of the morbid process. This is associated with an emigration of white corpuscles, causing an increase of bulk and a thickness of the connective tissue; the sheaths of vessels being often from three to five times their normal thickness. These cells are transformed into fibrillar tissue in the course of time, and the process is so similar to inflammation that no fault could be found with those who consider this as chronic inflammation.”

In conclusion I would call attention to the value of the determination of the extent of the swelling into the vitreous humour, which can readily be done by observing with what convex glass the highest point of the papilla can be distinctly seen by the ophthalmoscope, used with the erect image. A simple calculation enables one to know how many parts of a millimetre the apex of the swelling projects beyond the fundus, and permits one, in watching the progress of the case, to note any advance or retrogression of the swelling that may occur during the treatment.

ART. VI.—*Case of Membranous Enteritis.* By B. VAN VALZAH,
M.D., of Spring Mills, Centre County, Pennsylvania.

THE following case is extracted from a thesis presented for graduation at the Jefferson Medical College, and with the consent of the Faculty I place it on record :—

Miss ———, æt. 40 ; menstruated at fifteen ; at seventeen she had transient suppression of menses, with subsequent dysmenorrhœa, which has continued almost ever since. In 1850, being then eighteen, she had enlargement of the lymphatic glands of the neck. About this time (after exerting herself in lifting) she was seized with such intense pain in her back as to cause almost immediate syncope. It lasted several days, and was accompanied by great nervous irritability. Her back has ever since remained weak and sensitive. She was attacked thus at various intervals for several years. During 1851–2, she was subject to bilious colic. She also, for years, experienced erratic neuralgic pains. In 1857, her eyesight became materially impaired, and remained so for six or seven years. The affection was supposed to be of a nervous character. In 1864 she experienced on moderate exertion some difficulty in breathing, which recurred several times during the following spring, and about June she had an attack which seemed to threaten fatal apnœa. This attack was entirely nervous ; she had had no previous pulmonary disease, nor was there during any attack secretion in the bronchial tubes. The paroxysms were without premonition, and lasted two hours. One or two attacks of almost equal severity followed within a few months, then milder ones for about two years, when they entirely disappeared ; for several years subsequently she enjoyed comparatively good health. In the spring of 1868 she took a severe cold ; had soreness of her flesh ; bowels were torpid and there was a feeling of tightness over the chest ; the latter continued for some time, when it was discovered that there was great contraction of the skin of the upper part of her body, the arms, head, and neck all being implicated ; the hollows about the neck and armpits were entirely obliterated, although these had been quite marked. The muscles and bones were so tightly bound in as to render their contour perfectly distinct. The skin over the stomach was exceedingly tense. A sense of constriction was felt in deglutition. There was little motion of the head backward or forward, and the exertion of attempting to nod or stoop caused a constant feeling of soreness in the scalp. The skin was bluish in colour ; felt hard ; was without wrinkles, and could scarcely be pinched up. There was however little disturbance of her general health. This condition continued for nearly a year, alternately worse or better, and then gradually ceased. During the summer of 1869, she lost flesh and strength ; had a quick pulse, and a constant feeling of lassitude ; did not feel rested, although she slept well ; she had a constant disposition to yawn, and fainted on slight exertion ; appetite good, but there was an apparent want of assimilation. In the fall she had occasional attacks of pain in her sides and back. Towards spring there was considerable improvement, and for a year she gained in weight and strength. In February, 1871, as the result of catching cold, she was afflicted with faceache, torpor, and tympanitic distension of the bowels, with constant soreness, but no fixed or acute pain. In April the

soreness gave way to paroxysms of sharp pains, limited to a spot about an inch below the umbilicus. The pain was of a darting tearing character, readily produced by a jar, but not affected by steady pressure. The attacks always preceded menstruation. The tympanites disappeared after May, but the spells of pain continued frequent, though short, and always in the same place. In June her stools were muco-sanguinolent and very offensive; she had frequent feelings of chilliness and an apparent want of circulation in the capillaries of the skin. This chilliness continued all summer and autumn, usually more marked in the morning. Digestion remained good, and she slept well.

The last week of August she had an attack of diarrhœa lasting two weeks; with much disturbance of her general health. About the middle of September there was an unusually severe recurrence of pain in the old place, extending to the back, accompanied with nausea and vomiting. After a few days she was apparently as well as before the attack. At this time her appetite began to fail, and she had almost constant diarrhœa. October 4th, pain began again about 8 o'clock P.M., attended, as before, with nausea and vomiting, with a disposition to go to stool, but felt too weak and faint. At noon while at stool she had a copious hemorrhage from the bowels, which recurred twice within the next hour, and she passed in all nearly a quart of black, tarry, and horribly offensive blood. Though greatly weakened she rallied, and in a week was much better. October 11th, acute pain with sick stomach; during that day and the next day she passed with her feces a quantity of jelly-like matter somewhat similar to the white of an egg. The subsequent stools were dark, turbid, and rather scanty; these passages recurring each Monday for five consecutive weeks, always preceded by pain and nausea, which disappeared with the appearance of this matter in the stools. During the remissions she suffered from nausea, a feeling of depression, and chilliness every morning. There was during this month a constant, though not very marked increase of temperature, and acceleration of pulse.

December, considerable improvement; appetite variable, occasional nausea; bowels acted regularly and stools nearly natural. She was then taking (besides nutritious food, tonics, and opiates) bismuth and tannin, afterwards argent. nit. in pill, ol. terebinth., occasional counter-irritation with iodine; the best result however was obtained from the use of the neutral mixture, the effect of the other drugs being entirely negative. About the first of January, 1872, there was an increase of nausea, almost total loss of appetite; her head felt dull; nose became sore and itchy; gums inflamed; chilliness; lower extremities sore and stiff. These symptoms continued for three weeks, the pain and soreness in her limbs becoming more and more marked. Then there was an eruption on her legs, feet, and arms; feet somewhat swollen. The eruption consisted of spots varying in size from a pin-head to a dime, of a bright red colour, not perceptibly raised above the surface, and exquisitely sensitive to the touch, and continued several weeks; the feet were somewhat œdematous. January 23d, she had an attack of pain which gradually increased in severity until it became fearful, darting to the back and thence all through the body, attended with violent retching and vomiting, and a sense of constriction about the heart. The pain was ultimately relieved by hypodermics of morphia. She was extremely prostrated; sphincters were relaxed, and everything she attempted to swallow, even a sup of cold water, was regurgitated; she slowly rallied and a gradual improvement took place. There was no

evacuation of the bowels for three or four days subsequent to the attack, when she passed a quantity of membranous matter with the feces. The appearance of this membranous or diphtheritic substance was almost like boiled maccaroni, or not unlike sections of tapeworm. Part of it was in coils, part in strips, of a white homogeneous, semi-solid character. It was not very tough, but permitted of considerable manipulation. No tests were applied. It did not dissolve in cold water, but did so almost entirely in water at 70° F. These discharges continued every other day for two weeks; slight pain was experienced daily; increased mental activity was observed; scybalæ were passed about this time of a tenacious tallow-like consistence, covered, and accompanied with, a good deal of mucus. Improvement continued for a month, when there was another attack very similar to the previous one, except that the pain was not nearly so severe. The membranous matter was scarcely as consistent as that formerly passed, nor in as large quantity. Her urine during this time was scanty and high coloured; continued improvement followed.

The next attack did not occur for five weeks, her stools in the mean time being nearly normal but containing occasionally scybalæ, coated with mucous and sometimes a lime-like crust. The third attack was still less severe than the second, and was followed by greater improvement. Since then she has had three attacks at regular, though gradually increasing, intervals up to the present time. Occasionally, however, they display a good deal of irregularity both as to time and severity. Once in about two months she has an attack of pain in the bowels, preceded by chilliness, aching in the extremities, soreness of the mouth or eyes, urine high coloured and scanty, and followed by a discharge of more or less mucus, separate from and not mixed with the fecal matter, and as she described it, "sometimes like the scum on lime-water." She does not pass membranous matter with every attack, and shreds are fewer and smaller. Frequently she passes lumps of matter very like balls of putty, of a greasy tenacious character. During the intermissions her evacuations are natural. Her appetite is usually good, but her digestion is not strong; skin and temperature natural; pulse varies from eighty to ninety. She menstruates regularly, but for the last two years or more she has had considerable leucorrhœa. Some months since an examination was made, and ulceration was found around the os uteri, extending into the cervix. This was treated locally, and the symptoms soon ameliorated. Her urine the greater part of the time is natural, but sometimes, especially during attacks of pain, deposits much reddish sediment; for this she takes potass. bicarb. and citric acid with relief. She thinks she gets over an attack quicker by taking the neutral mixture, than without it. She has been taking comp. tinct. of cinchona with tr. ignatiæ or tr. nucis vomicæ for a number of months, and uses opium by suppository whenever required to allay pain.

This is evidently a marked case of what Mr. Walter Whitehead has described as mucous disease of the bowel, and Prof. J. M. Da Costa in 1871, as membranous enteritis.¹ Other writers speak of it as "painful affection of the intestinal canal," "pseudo-membranous enteritis," "follicular enteritis," etc. Prof. Da Costa, analyzing a number of cases, deducts as symptomatic of this disease, certain nervous disorders, as hysteria, headache, impairment of memory and sensation, disorder of the special senses, hypo-

¹ See Nos. of this Journal for July, 1871, p. 189, and October, 1871, p. 321.

chondriasis, increased mental activity during attacks, and irritability. Also high-coloured urine, uterine function often irregular, dyspepsia, marked and persistent abdominal pain, the characteristic discharge from the bowel. This case, it will be seen, presents nearly all of these symptoms, with the addition of a number of others. There is a long history of nervous disorder, a peculiar skin disease, derangement of the sense of sight, irregular uterine function, dyspepsia, high-coloured urine, intestinal disorder terminating in distinct attacks of pain accompanied by the characteristic discharges from the bowel, the pain finally coming on at regular intervals, preceded by chilliness, aching of the extremities, soreness of the mouth or eyes, and relief with the appearance of the discharge. There was also increased mental activity, and a severe hemorrhage. The amount of matter discharged was marked and persistent. Of the remedies employed, little or nothing can be said in favour of any of them.

ART. VII.—*On External Diaphoretics, particularly the "Wet Pack," in Eclampsia connected with Albuminuria.* By ISAAC G. PORTER, M.D., of New London, Conn.

It is now nearly thirty years since albuminuria, as connected with puerperal convulsions, began to engage the attention of the medical profession. Blackhall, it is true, as early as 1818, referred to a case of pregnancy, where the urine was coagulable by heat and nitric acid; but it was only a single observation, and succeeded by no broad generalization, as regards anasarca in pregnancy. Nearly ten years subsequently, Dr. Richard Bright laid the profession and the world under lasting obligations by his researches into nephritic affections, and particularly acute and chronic desquamative nephritis. Both of these affections, as all know, are attended by albuminous urine, the former, however, being chiefly functional, involving much less danger than the latter, which is more or less organic. This pathological fact led very naturally to an examination of the urine in puerperal anasarca, and the field was faithfully cultivated by Drs. Lever of London, Simpson of Edinburgh, Rayer, and others, and resulted in the discovery of an intimate relation between albumen in the urine, and coma and convulsions and such nervous affections in pregnancy as neuralgia, amaurosis, deafness, obstinate vomiting, puerperal paralysis, and puerperal insanity. So far as recovery from albuminuria in pregnancy is concerned, it may be said to resemble acute Bright's disease, rather than the chronic form, provided life is not sacrificed at or near parturition.

It may be sufficiently noteworthy to add, in this connection, that, as

an important surgical operation, or pneumonia, or any other severe inter-current affection, occurring during the existence of chronic Bright's disease, is more liable to prove fatal, than under other circumstances, so when any accident complicates labour (*e.g.* a moderate *post-partum* hemorrhage), in the weakened state attendant on severe puerperal albuminuria, the patient sometimes unexpectedly succumbs.

But the question may arise: "What is the etiology of eclampsia as connected with albumen?" Some have supposed that the blood, partially divested, through faulty action of the kidneys of this important ingredient, ceases adequately to support and nourish the nervous centres; hence there is increased polarity of the cerebro-spinal system, with unnatural sensitiveness to anything excito-motory, such as the throes of parturition, the introduction of the hand in delivering the placenta, indigestible food in the stomach, a loaded rectum, or fright. Each of these are, doubtless, exciting causes; but it is generally conceded, that the remote cause cannot be referred to the paucity of albumen in the blood, or, I need scarcely add, its presence in the urine.

2d. A second theory is this: that the convulsion is owing to acute œdema of the brain, the exciting causes being a compound of that excessive hyperæmia or hydræmia, often found in albuminuria and the violence of labour; the exudation of serum compressing the vessels of the brain, thereby producing, as the case may be (according to Traube), either coma or convulsions, according as the pressure is exerted on the cerebrum, or the mesocephalon. This theory seems scarcely tenable, since these conditions often meet in labour without the resultant convulsion.

3d. In similar conditions of the circulating fluid, others believe that the eclampsia is owing to pressure on the brain from arterial stress and strain, incident to tedious or violent labour. Probably, however, if a convulsion occur, it is referable more to the morbid condition of the blood than the influence of labour.

4th. But the theory which is best sustained by clinical experience is that of toxæmia; uræmia having resulted from the retention of organic compounds in the blood, through diseased action of the kidneys, while albumen, through the same faulty condition, escapes; or, as claimed by Frerichs and others, the urea is chemically converted into carb. ammon., which thus becomes really the noxious agent. It may be doubted whether this change occurs, since benzoic and tartaric acids and lemonade drunk freely, with vinegar baths externally, a course of treatment which he recommends as neutralizing the carb. ammon., have failed in practice. Hence it remains that, whether the toxic agent be urea or carb. ammon., both, alike, must be eliminated by purgatives, diuretics, or diaphoretics.¹

¹ For able and exhaustive history of the connection between albuminuria and eclampsia, the reader is referred to the No. of this Journal for April, 1871, p. 442 et seq. On the 444th page the writer of the article referred to says: "Prof. Braun

This preliminary sketch of modern scientific views respecting the main cause of eclampsia, seemed necessary, the better to understand the operation of external diaphoretics, as in the following and similar cases.

Dec. 19, 1872. A married lady, æt. 19, seven months advanced in pregnancy, was attacked with convulsions at 5 P. M., following each other at short intervals. The day was cold and damp, and she had just returned from a long walk. For two months she had been quite anasarcaous; bowels constipated; with headache at night and when lying down. Dr. F. N. Braman of this city was sent for, but being absent, did not arrive until 9 o'clock P. M. An examination revealed the cervix uteri hard, conical, undeveloped, and the os closed, almost as in the virgin state, while there were no signs of labour. Four hours subsequently the writer saw her in consultation, and being requested by the parties, became associated in the subsequent treatment of the case, which then remained as above described: convulsions long and violent; patient, in the intervals, entirely unconscious. Bowels had been evacuated by castor oil and enemata and medium doses of chlor. hydrate had been administered. No urine had passed, but fortunately some was found under the bed which had been voided previous to her walk, and which had a specific gravity of 1.012 (thus affording the presumption that urea was retained *in the blood*), and contained so much albumen that it was nearly solidified by heat. It was not examined for casts. The doctor had already resorted to ether and chloroform to forestall the convulsions, and their use was resumed after my arrival. But as previously, they had to be relinquished, for while she struggled violently as inhalation was proceeding, with anæsthesia came difficult respiration, profound stertor, and a failing pulse, the latter previously having been quite weak. The face and person were much bloated, and as bleeding was inadmissible, the case was nearly desperate. The rigidly closed os and cervix uteri seemed to forbid forced labour, where no signs of it existed, whether attempted by the introduction of a sound to rupture the membranes, or tents, or Barnes's dilators, or the uterine douche. All were too tardy to meet the exigencies of the case.

Here I would interpolate a brief abstract of another case (as a sample of many) the memory of which influenced the subsequent treatment.

An elderly gentleman, with chronic Bright's disease, was subject to attacks of coma and convulsions whenever suddenly exposed to cold and damp air; and nothing so speedily relieved the symptoms as a forced sweat in bed, by means of a steam-bath, or more feasibly, by putting his feet (by bending his knees) into hot water beneath the bed-clothes and applying freely, hot bricks and bottles around the body.

of Vienna," referring to the coincidence of eclampsia and albuminuria, remarks, "that this has opened a new path to the knowledge of this most dangerous disease; so that the eclamptic convulsions of women during pregnancy must be considered to be identical with the fits of adults in general that are produced by uræmia in the course of Bright's disease;" and on p. 450 he adds: "Prof. Braun's view that eclampsia parturientium is commonly the result of uræmic intoxication arising from Bright's disease of the kidneys, produced mostly by carbonate of ammonia in the blood, perhaps also extractive matters in the urine," is purely hypothetical.

The writer of this note feels incompetent, in view of the evidence, to decide the important point in controversy; but, if err he must, he prefers to do so with Braun and the great mass of medical opinion and authority in the world.

Dec. 20, 8 A. M. The patient had now experienced about thirty convulsions, when it was noticed that her skin had become slightly moist, as if nature were making an effort to expel the poison, and there was a slightly lengthened interval between the attacks. We immediately placed her in a hot "wet pack." A few straps, or cords were first placed on a bed, then thick woollen blankets, and on these a folded sheet, wrung out of water as hot as could be borne. On this the patient, previously divested of clothing, was placed and rolled up in the blankets, and as she was not in labour, the lower extremities were not packed separately, as might be done when the case demanded it. Hot, rather than cold water was used, for fear of checking, by the shock, any incipient perspiration. In the robust, with tonic condition and hot and dry skin, the "cold pack" would doubtless be preferable. We also placed a hot mustard poultice over the loins; but this was soon removed, as a motion of the head from side to side, showed existing discomfort, and we feared lest the irritation should result in unhappy reflex action. Shortly after completing our preparations, she had a recurrence of spasms, but soon became universally wet with perspiration offensive, if not urinous, in odour, and passed within an hour into a tranquil sleep, and had but one more convulsion, which was the thirty-second. She remained carefully "packed" five hours, and moderate diaphoresis by milder means was continued through the following night, during which time her thirst was intense, although freely gratified with cream of tartar water, spts. of nitrous ether and water, and nourishing drinks. During the "pack," cold was applied to the head and ten grains of calomel placed upon the tongue, and when able to swallow, one drop of croton oil and 3j castor oil were administered three times, at one hour's interval, which operated freely. A cough, followed by frequent vomiting, occurred, which doubtless tended still further to depurate the system of urea and ultimately yielding to medium doses of brom. potass., natural sleep following.

Dec. 21, 5 P. M. Labour-pains now appeared, and the delivery was completed at 2 A. M. of the 22d inst., under the charge of Dr. Braman. It was natural, required nothing but gentle manual assistance, and was attended by no convulsions; child dead. The urine during the preceding day was liberal in quantity, and after cooling, was nearly the colour of milk; chemical tests showing that it was four-fifths albumen. Under the judicious treatment of the same medical gentleman, she made a slow but satisfactory recovery. Traces of albumen, however, existed as late as April 2d. It may be added, that, for a period of sixty-eight hours from the outset of the attack, there was no intelligent consciousness.

As points of interest in the foregoing case, the writer would refer to the following:—

1st. The desperate condition of the patient when external diaphoresis was resorted to; os and cervix uteri rigidly closed; no signs of labour and its normal period remote; therapeutic means of acknowledged power resorted to and found fruitless, and others (often of great efficacy) inappropriate and hence out of the question. Query; Is ether or chloroform ever proper, in continuity, where there are no signs of labour, and the expectation of delivery entirely indefinite? In this case it had no influence in quieting inordinate nervous irritability. A number of cases, which the writer supposes were of this description, have come to his knowledge where

primiparæ, suffering from anasarca, have fallen (one in her garden) in convulsions, having checked perspiration in cold and damp weather, and have died without signs of labour. What more appropriate, than to treat such cases as if they were Bright's disease in the male? taking care to eliminate the urea and leaving the complications to nature.

2d. The "wet pack" is not inconsistent with the simultaneous use of other active medication. Bleeding may be practised when called for, as in any other disease; cupping the loins may precede to relieve hyperæmia of the kidneys; we may apply cold to the head, or administer hypodermic injections of morphia, or enemas of chloral hydrate, or, if the patient can swallow, we may give bromid. potass. or tart. antimon.

The importance and efficacy of external medication in eclampsia, in the form of diaphoretics, are ably set forth in an interesting article, by Jaquet of Berlin, translated and published in a recent number of the *Philadelphia Medical Times*,¹ to which reference is made for additional details and arguments. If seen prior to the occurrence of this case, I had forgotten it; as shown by the late hour at which the remedy was resorted to. Jaquet had used the "wet pack" in eight cases, at the time of writing, with satisfactory results.

My object will have been attained, if I have brought prominently forward a remedy in puerperal convulsions, not entirely novel, yet one too much neglected and overlooked, and valuable, doubtless, in all cases attended by albuminuria. Where labour is nearly completed, we may not care to resort to it, but it is eminently useful when other means are exhausted, or are inappropriate to the case.

A single clinical observation, standing alone, is often of little importance, and yet, it may call attention to a principle, whose truthfulness future experience shall authenticate and establish.

ART. VIII.—*The Influence of Rest in Locomotor Ataxia.* By S. WEIR MITCHELL, M.D.

MANY years ago I attended a gentleman who had locomotor ataxia which came on with a terrible suddenness in the form of a neuralgia of the lower limbs. It arose, as he believed, from having bathed in the sea when chilled. The first attack was described as agonizing. It lasted two days only, and was followed, after a few weeks, by a second. Thenceforward they grew frequent, and at length no day passed without some hours of such torment as I have never seen equalled in ataxic neuralgia. The ataxic symptoms were more slowly developed, and did not at any time extend to the upper limbs. Ten years after the first attack of pain, he fell when

¹ September 2d, 1872.

getting out of a street car, and ruptured the internal lateral ligaments of the right knee. Owing to this accident he was forced to remain in bed three months. During this period the pain became less severe and less frequent, until it finally ceased. When he got about again the pain did not return, and during several years there was no renewal of it, nor, as I have since learned, did it ever again annoy him. It was also remarked that the ataxic symptoms, which hitherto had advanced slowly, progressed no further, and remained unaltered until his death, several years after, from acute disease of the lungs. I regarded this case for a time as a curious medical incident, and though presuming that the check in its progress might have been such an one as we often see in this disorder, I nevertheless kept it in mind.

Five years ago, a patient *æt.* 47, who had well-developed ataxial troubles with continuance throughout of the neuralgia, broke his leg. The long enforced rest which followed entirely stopped the pain, which has never come back. The ataxial symptoms have increased but very slowly; I am not confident that their rate of advance was altered, but I am certain the pain was quite abruptly ended.

The third example did not occur in the person of one of my own patients, but all the facts are well known to me. In this case the patient broke his thigh, and, soon after getting about, broke his leg. The prolonged rest thus necessitated terminated the neuralgia, previously severe, and seems up to this date (four years later) to have arrested the march of the disease, said to have been before that quite rapid.

A fourth instance was related to me recently. Here also the left leg was broken, and the neuralgia ceasing did not recur, although, as to the ataxial symptoms, I can learn nothing.

There is now in the infirmary for nervous disease attached to the Orthopædic Hospital in Philadelphia, a woman, *æt.* 48, who has ataxia with frequent, almost daily, spells of very painful neuralgia. A few weeks ago she broke her left thigh and, being at once put to bed, has had since then but a single attack of pain.

In one of the male wards of the same hospital is a bad and very painful case of ataxia in the early stage. To test the correctness of my belief as to the value of absolute rest in relieving ataxial neuralgia, I have kept him several weeks in bed, no medicine having been given until very lately. The result as to control of the pain has most surely been very remarkable. Before going to bed he could not walk without aid, nor could he stand for even a moment with closed eyes. The pain was inconstant, but never left him two days without extreme torment. Six weeks of almost absolute rest enable him to stand a few moments with shut eyes, to walk unaided up and down the room, and to assure me of his entire freedom from pain since the seventh day in bed.

I do not think these cases can be looked upon as mere coincidences of

pain ceasing about the time of the injury; I should rather conclude that exercise has power to flush the ganglia used in movement just as thinking brings blood to the brain and raises its temperature, and that this afflux of blood, or at all events the mere functional activity, is in some way injurious and irritating to the diseased centres. This will seem at least a reasonable view if we recall the influence of motion upon certain facial neuralgias. Even where there is no tender point, talking or chewing will often cause increase of pain, or awaken pain afresh. Thus I have lately seen a case of frightful torment in the upper jaw, which was due to acid dyspepsia, and was cured when this state was relieved. The stomachal condition had created, however, a state of the nerve centres of the fifth nerve of such a character that if the patient attempted to talk or laugh it presently resulted in a severe fit of pain, nor is this a very rare or merely curious example. Considering the spinal posterior ganglia and columns as in ataxia ready to pass into the state which gives rise to pain, it seems likely enough that exercise may be efficient in bringing it on. Exercise does not only mean motion in a physiological view of its totality of results, but it also involves the passage centripetally of a host of impressions generated in the moving tissues, and of necessity passing through the central sensory ganglia, and their related parts. The centres of motion and of sensation are, therefore, active during movement, and are then alike excited, so that we may with these facts in view see why motion may excite sensory organs.

It seems, then, that in the painful stage of locomotor ataxia motion is probably injurious, and that rest in bed is for like reasons useful. Time alone with future experience can be relied upon to determine how general may be the value of some such mode of treatment of ataxia and ataxial pain, and how permanent may prove to be the result. I am perfectly well assured in my own belief that rest will prove to be the best treatment for the early stages of ataxia, but if I were even less secure in my opinion I should not hesitate to speak of it as a possible mode of relief, since so little of value has been offered in the way of cure, or even of partial relief, in this long and distressing malady.

It naturally occurs to ask why so many ataxics have chanced to break limbs, and as to this I should answer first that no people are so awkward or fall so much, and next, that in some of the cases, it seemed to me that the habitual abruptness of the muscular acts had a share in the calamity, and that I have suspected, what has not yet been proved, that the bones in ataxics may suffer some impairment of their nutrition, and hence of their strength. Such was the case in Dr. Pennock's case, reported by Dr. C. Morris, where the lesion was sclerosis of the antero-lateral columns of the cord. But this is as yet purely speculative, however full of interest, and what I want to set forward prominently is that I have seen rest cure the neuralgia of posterior spinal sclerosis, and apparently in some cases arrest the disease.

ART. IX.—*Progressive Locomotor Ataxia, treated by Hypodermic Injection of Strychnia.* By W. B. DRINKARD, M.D., Professor of Anatomy in the National Medical College; one of the Surgeons to the Children's Hospital, Washington, D. C.

THE subject of the present case was a gentleman aged 50, who was brought to my notice as presenting an example of a somewhat rare ocular affection—double external strabismus. When I visited him on the 20th of April, 1872, I found him in the following condition: Paralysis of both nerves of the third pair; complete ptosis on the right side, partial on the left; both eyes in extreme abduction, right nearly immovable, and drawn a little down as well as outwards; pupils somewhat dilated, paresis of accommodation apparently slight. (The equivalent of vision was not ascertained, having no scale of test-types with me at the time); the patient habitually used a biconvex lens of medium power, so fixed on a handle that he could easily adapt it to the left eye in its abducted position.

Ophthalmoscopic Examination.—Optic papilla in *left eye* paler than normal; arteries somewhat reduced in bulk; reverse condition, *i. e.*, that of slight hyperæmia of the disk, in the *right eye* (the one affected with complete ptosis). Refractive media clear.

Head fixed in one position, being carried very much to the right side, so as to use the left eye—the only one employed in vision. Speech perfect; patient thinks there is occasionally some sluggishness in the action of the tongue—which, however, is not perceptible to others. Hearing as good as it ever was. His arms are more or less useless to him, unless objects held in the hand are *seen*; can grasp a hand firmly, or carry a glass to the lips if it be fixed by the left eye; lets the hand go, or the glass fall, if that eye be closed. Sensibility is less perfect over right than left arm. Legs can kick vigorously, and support him perfectly; gait good, though hesitating, with eyes open; “shuffles” a little, and walks with a certain amount of hurry, or precipitancy; his walk is “titubating” in a marked degree when the part walked over is not fixed by the eye. Describes his sensation in walking “as if the bottom of his foot were a flat shingle.”

More or less constipation; constant incontinence of urine; of late, there has been complete loss of virile power. Suffers from acute neuralgic pains through the extremities, recurring at least every six hours, unless he keeps himself under the influence of morphia—gr. $\frac{1}{4}$, hypodermically, four times a day. (This was the quantity I was induced to believe that he was using, from his calculation of the strength of the solution employed). Morphia does not produce drowsiness or other perceptible effect, beyond subduing the pain, and, perhaps, adding in a measure to the constipation. Appetite tolerably good. Digestion unattended with any special discomfort.

History.—His life has been one of active business; during the war, he was much exposed for some months as a scout. At one time a dealer in hides, he was exposed to arsenical exhalations, but never, to his knowledge, to the influence of lead. Underwent exposure to malaria in 1867, on the White River. Soon after, he was suddenly taken with ptosis of the right eye, accompanied with external strabismus. A like paralysis made its appearance in the left eye in the course of the following year. Some loss of virile power had already been noticed, with diminution of

muscular power, and pain in the right arm. Then followed obstinate constipation, incontinence of urine, diminution of power in left arm and in legs; the pain meanwhile increasing. About this time, the patient consulted a well-known ophthalmologist of New York, who prescribed strychnia, which was taken before meals, and producing systemic effects too decided to be pleasant, was discontinued. He afterwards consulted a physician in Boston, who prescribed bromide of potassium; this was taken without perceptible effect. Then, at the suggestion of a friend, he took chloral, in large doses, but was forced to give it up also on account of its prostrating effects. A year ago, he had an erysipelatous inflammation of the right foot; since recovery from this attack, he states that his appetite and digestion have been better, his constipation less. His family physician lately recommended strychnia, gr. $\frac{1}{32}$, three times daily; which I advised should be continued.

Progress of the Case.—May 17. The internal use of strychnia as above has been continued with good effect; improvement of appetite; diminution of cutaneous anæsthesia; general condition and feeling better. At this date, I commenced the hypodermic treatment, injecting at first gr. $\frac{1}{8}$ of the sulphate of strychnia daily into the temple. Almost invariably the patient remarked a flash of light before the eyes within the minute after the injection. Each one was followed by an increased perception of light, which the patient ascribed to a lessening of the ptosis, possibly, also due to the action of the drug on the retina.

24th. The patient's weight, to-day, is $110\frac{1}{2}$ lbs.; as compared with his former average weight of 160 lbs., a loss of 30 per. cent in about five years.

26th. Injection continued daily up to present time, producing continued increase of cutaneous sensibility, increased power of retaining urine (since three days, he has been able to retain it all night, and to void it naturally in the morning). Constipation lessening; increase of power of adduction in left eye; more natural feeling in the legs and more capability of walking without fatigue; pains in the arms somewhat diminished in intensity; they have almost entirely disappeared from the bladder. The doses of morphia are being gradually diminished in amount: he still takes them at the same intervals.

June 11. The dose of strychnia has been gradually increased up to gr. $\frac{1}{32}$, twice daily, without inconvenience, and with an increase of amelioration in symptoms as noted above. The patient left to-day for his home in New England.

A letter received after his departure—dated July 11th—states that “he has been almost entirely free from costiveness for the past two weeks. . . .

A very good appetite, and also improvement in the movement and sight of the eye; but, if anything, an increased numbness in his arms and limbs, with the usual attacks of pain every six or eight hours. He rests and sleeps better of nights than he did when in Washington.” During this interval of a month, he had been continuing the use of strychnia, sometimes by the mouth, but as a rule hypodermically. Later still, in the early fall, I received a letter from him, stating that he was about as before in other respects, but suffered a good deal from flatulency and was annoyed by marked swelling of the feet. I since learned that at the time of writing he had intermitted the use of the strychnia, and did not resume it until his return to Washington, where I first saw him again on the 1st of December. His feet and ankles were then very much swollen, and he

complained of almost constant flatulent distension, causing sometimes very severe pain. I observed no decided change in him in any other respect. Advised him to recommence the strychnia, internally at first, gr. $\frac{1}{32}$ three times daily. This relieved the flatulency altogether for awhile; afterwards returning, it yielded readily on the addition of carminatives. The œdema gradually decreased.

Sickness of other members of his family prevented me from giving him very close attention until towards the last week in December, when I began the hypodermic treatment again, at first gr. $\frac{1}{32}$ once daily, then the same quantity twice daily.

About this time, he became very much absorbed in an important and intricate piece of business, whose details he managed with a dexterity that showed how entirely unclouded his intellect was, but which evoked an amount of concentration and anxiety disastrous in their results. He had, at my suggestion, again begun to reduce the doses of morphia; but now he found himself driven to them again, as much from the imperious opium-appetite as from pain, I am inclined to think: although the pain must at times have been fearful.

1873, January 9, was called in haste to see him, and found Dr. C. M. Ford already in attendance. The pain this time had lasted from 7 o'clock, A. M., until 4 P. M., the hour at which, despairing of obtaining any relief from morphia, he had sent first for me and then for Dr. Ford. At 5, Dr. Ford and myself saw him together. The pains this time affected the legs; as a rule, they more frequently attacked the arms. The patient (a man of more than ordinary nerve and endurance, habituated for so long to these severe ataxic pains) was crying aloud in his agony: the spasms of pain recurring, apparently, every two or three minutes, contracting his limbs like a sudden cramp (to which he compared the sensation), and leaving him after half a minute or a minute; he being perfectly free of pain in the intervals. Dr. Ford suggested and tried compression of the sciatic nerve and its branches: this was not disagreeable to the patient, did not increase the pains, but had no perceptible effect in lessening them: and as soon as one limb was relieved, the other was attacked. He had had a hypodermic injection of morphia, just before Dr. Ford's arrival; we contented ourselves, therefore, with giving one of gr. $\frac{1}{3}$; and inasmuch as he complained very much of flatulency, referring to an uncomfortable sensation in his abdomen as the starting-point of each successive spasm of pain in the legs (and having been constipated for a day or two), we prescribed \mathfrak{zj} of Hoffman's anodyne, to be repeated in two hours if required, and directed an assafoetida enema to be given. Between 5 and 6 $\frac{1}{2}$, I had given him, in all, three hypodermic injections, respectively of gr. $\frac{1}{3}$, gr. $\frac{1}{3}$, and gr. $\frac{1}{2}$ of sulphate of morphia. The last dose quieted the pains, somewhat lessening their intensity and increasing the intervals between them.

This insusceptibility to morphia suggested investigation. Inquiry developed the fact, that he had been gradually increasing the amount taken, of late, until he was now using a solution of \mathfrak{zj} to $\mathfrak{z}ij$ of water; of this he was now having administered to him injections of \mathfrak{mxxv} —a little over $1\frac{1}{2}$ gr. of morphia. Of these he had taken at least 4 between 7 o'clock A. M., and 4 P. M., of this day; making with what I myself gave him afterwards more than 7 grs. of morphia taken hypodermically inside of twelve hours, without entire relief to the pain!

He was sufficiently relieved during the night to get some hours sleep. The pains recurred the next day at about the usual intervals, but without

the excessive violence of the day before. I pointed out to him and to his attendants the necessity of reducing the quantity and number of doses of morphia, gradually, but systematically; and this was done throughout the ensuing week, but without the reduction in quantity having been at the last carried below $\frac{1}{3}$ grain, or the intervals lengthened beyond four hours: stimulating and nourishing diet was at the same time directed.

January 13th, he had several copious stools—the ordinary *débâcle* of opium-eaters—and this emptying of the bowels continued the next day; each stool seeming to leave him more prostrated. He failed rapidly during these two days, and died quietly on the morning of the 15th, his mind being unobscured to the last, when not under the immediate effect of the paroxysms of pain.

No autopsy could be obtained. Without it, the case is of course incomplete, and adds nothing to our knowledge of the pathology of locomotor ataxia. In its clinical aspect, however, it is interesting, as presenting a typical example of the disease. The treatment, too, by strychnia administered hypodermically, is novel, I believe, inasmuch as, during nearly twelve months that have elapsed since I instituted it in this case, I have found no instance of its use recorded in similar conditions.

Ex uno, disce omnes, is not a locution often applicable in practical therapeutics, but from the foregoing facts of a single case, I think we may infer:—

1st. That strychnia offers at least as much chance of amelioration in locomotor ataxia as any other remedy that has yet been tried in this disease, and that its benefits may be more promptly and decidedly obtained by the hypodermic method than by its internal use. Moreover, the tolerance exhibited to the use of the drug, verified by my own experience and by the numerous recorded instances of its employment in ophthalmic practice, justify me in thinking that the amount thus given may be increased far beyond what I used in this case, gr. $\frac{1}{32}$ twice daily, and with proportionate increase of beneficial effect.

2d. That without denying to morphia, especially as administered hypodermically, its place as the sheet-anchor in this terrible disease, whose frightful and characteristic pains will yield to nothing else apparently, we must yet be even more on our guard in administering it than we usually are. For even if there be not a special tolerance of opium and of all sedatives and narcotics in locomotor ataxia, as there probably is of strychnia in this and other conditions of nervous tissue-change, the severity of the pain itself may increase its toleration, and encourage the continued use of larger and larger doses; until, finally, relief can only be obtained by an amount conceivably incompatible with life, or the patient sinks, killed as much by the drug as by the disease.

ART. X.—*Absorption of two inches of the Shaft of the Femur.*

By FRANK K. PADDOCK, M.D., of Pittsfield, Mass.

I AM induced to report the following case because it seems to establish the fact that there may be local osteitis, with absorption of the mineral portion of an entire section of a long bone, without the formation or deposition of any fibrinous or plastic material or other product of inflammation either in or adjacent to the diseased bone.

The patient was a lady æt. 59, the mother of four healthy children, to whom I was called Jan. 15th, 1872, on account of lameness in her left thigh. I found upon examination an exceedingly tender spot on the anterior portion of the left thigh about four inches below Poupart's ligament, about on a level with the lower angle of Scarpa's triangle. From this point radiated in all directions burning shooting pain of an excruciating character, but no swelling, redness, or increase of temperature in the part indicative of local inflammation; there was, however, extreme tenderness on the slightest pressure. In walking she was obliged to use two canes, although she could bear the weight of the body on this limb. The motions of the limb were unimpaired, except that she had no power to voluntarily carry the limb forward, viz., to flex the thigh on the body, or to rotate it; in walking she dragged this limb after the other. The temperature in the axilla was 101°, skin hot and dry, pulse 120, tongue somewhat coated, very little appetite, bowels inclined to be constipated, urine phosphatic, specific gravity 1025, and did not contain albumen. She was inclined to micturate every two or three hours. She was however daily dressed and about the house and took her meals with the family. At night she was very restless and slept very little, being kept awake by the constant pain in her thigh.

The previous history of the case was as follows: About four years before, she had quite a severe attack of nephritis attended with hæmaturia, from this she recovered except that afterward she was never able to retain her urine more than three hours at a time.

The lameness in the thigh she first noticed in June, seven months previous to my first visit. Her attention was first attracted by a disposition on the part of the left toe to strike any little elevation upon the surface upon which she was walking, like a threshold or board lying upon the sidewalk. She soon became conscious that the limb dragged a little and that she was very liable to trip unless extremely careful when walking. She also very soon discovered that she was losing the power of carrying the leg forward, of lifting the foot over any little obstacle in her path, or of going up stairs with that foot first. Not long after she first noticed these symptoms she began to experience pain and soreness in the thigh at the point previously mentioned. All these symptoms had gradually increased in severity up to the time of my first seeing her, when her limb could be moved in any direction without increasing the pain by grasping it quite firmly in the hands and moving it very slowly, but any quick or sudden movement caused her to complain bitterly. The limb was not shortened or swollen, nor was it either in appearance or to the touch in any way different from the other. She was confident that she had never

received any injury whatever even of the slightest character that could have affected the limb.

The pain and tenderness continued to increase in severity, and in two weeks after my first visit she was confined to her bed and unable to have the limb moved even in the most careful manner without suffering excruciating pain.

She became more and more debilitated; had no appetite, pulse became more feeble and more rapid. About two weeks before she died, I noticed one morning during my visit that the thigh was somewhat bent, and on lifting it up I found that there was a separation or fracture in the shaft of the femur at the point where she had suffered so much pain. The nurse stated that during the previous night she had felt something give way while lifting up her hips to place the bed-pan. After the femur had separated she failed more rapidly, and died March 28th, 1872.

Autopsy was made twelve hours after death. Very little rigor mortis—body considerably emaciated, although there was a thin subcutaneous layer of adipose.

She had one large white kidney containing several small abscesses; the other was very much contracted and also contained in the cortical portion one small abscess the size of a pea.

The other viscera were apparently in a normal condition. An incision was made in the thigh and the femur exposed from the trochanter major downward to the middle of the shaft. The tissues adjacent to the bone were in a perfectly normal state. There was not the least effusion of blood or extravasation of lymph either around the fractured ends of the bone or in the surrounding tissues, nor was there present the least indication of either old or recent inflammatory action. An entire section of the shaft of the femur two inches in length had disappeared, nothing remained of the original bone between the upper and lower fragment except a few shreds of periosteum and a soft fibrous substance containing a few small pieces or flakes of dead bone in its meshes. The ends of the bone were quite square, although they presented a rough and jagged appearance.

The periosteum was separated for about three-eighths of an inch from each end.

A section of the bone was removed embracing two inches of each end. At the point of separation with the saw the bone appeared healthy, there was, however, some congestion of the medulla.

No pus corpuscles were found, although a long search with the microscope was made.

This patient was a wealthy lady and belonged to one of the old New England families; her parents died at an advanced age. There was no evidence of any hereditary taint or disease. She was the mother of four healthy children, and was not aware of having received any local injury. The disease began and passed through its different stages without local increase of temperature, and without producing any swelling or redness. There was no indication of fatty degeneration of the bone. The prominent points in the case are excessive local pain, gradual loss of motion in the limb, absorption of a section of a long bone attended by constitutional disturbance, amounting finally to hectic fever and death.

ART. XI.—*Ovariectomy by Enucleation; Recovery.* Reported by SAMUEL LOGAN, M. D., Prof. of Anatomy and Clin. Surgery in University of Louisiana, and W. H. FORD, M. D., Professor of Physiology in New Orleans School of Medicine.

PROF. MINER's plan of operating for ovarian tumour being still *sub judice*, it seems to be the duty of all who resort to that method to report their results, and under that conviction we record the following case, the early symptoms of which were developed under the immediate observation of Prof. Ford, in whose practice the case occurred.

Mrs. A. H. L., æt. 42; married; multipara; nervous and excitable; subject to hysterical paroxysms; has not menstruated since birth of last child, now 21 months old.

May 12, 1872. Has a tumour in hypogastric region as large as the uterus at four months' utero-gestation, ovoidal in shape, movable.

June 8th. Tumour increased in size until it now fills the abdominal cavity; everywhere tender on pressure, or even to the slightest touch. Dulness on percussion over abdomen; fluctuation in the neighbourhood of umbilicus. General contour of tumour clearly recognizable; vagina and cervix normal; uterus immovable in hollow of sacrum. No foetal heart sound, but a constant murmur closely simulating the placental souffle, most marked on left side.

9th. Patient in great distress, demanding relief; abdomen tense and extremely painful to touch; fluctuation perceptible over the whole abdomen. Pains, similar to those of labour, coming on every hour or two. The uterine sound could not be introduced more than 2½ inches. Under diet, warm water douches in the vagina, stramonium poultices to abdomen, etc., the acute symptoms ceased after a few days.

The general fluctuation, the presence of bosselated enlargements on the sides of the pyriform mass, the rapid growth, and acute pains, determined the diagnosis in favour of cystic degeneration of the wall of the uterus, or of some of the annexes of that organ.

15th. Chloral at night; abdominal pains especially severe on turning in bed. Bowels regular; urine very scanty and high-coloured. Fever from time to time, but more in the last two days. Pain in the right iliac region. Appetite and digestion good.

25th. During last 48 hours has had a dribbling of clear watery fluid from vagina. Tapped in linea alba 1½ inch below umbilicus, and 1½ pint of glairy, flocculent, citrine fluid escaped during an hour; and as much more during the ensuing 36 hours, when the wound was closed with a bit of strap. Relief decided; very slight inflammation about the puncture. Ordered quinia and iron.

After this, patient was tapped seven times at intervals of from five weeks to six or eight days. The last tapping on October 10th. Fluids evacuated in all cases similar; citrine, glairy, and, towards the close of the tapping, almost puriform. Viscidity most marked in fluids obtained from the harder nodular masses of the left side of the body of the tumour. Punctures gave no trouble. The quantity of fluid drawn off at each tapping varied from three pints to two gallons. The puncture made in the last

tapping was intentionally kept open by the patient, in view of the relief from oppression, now very urgent, afforded even at the inconvenience of the constant discharge. Notwithstanding the escape of so much fluid, secretion was so rapid that enlargement continued. Puffiness under the eyes; legs and feet cedematous and cold; appetite fair; digestion imperfect; colicky pains; pulse 85. Girth through umbilicus, 34 inches; from pubis to ensiform cartilage, 15 inches.

Nov. 10, 1873. Ovariectomy having been decided on, it was performed this day by Prof. Logan, assisted by Prof. Ford, and by Drs. A. H. Cage, C. B. Galloway, and C. B. Galloway, Jr., of Canton, Mississippi. The patient having been put under the influence of chloroform, incision was made extending from the point at which the last tapping was performed, and from which the discharge was still issuing, about an inch below the umbilicus to the symphysis pubis. The opening into the peritoneal cavity was commenced below, and extended upwards, so as to be certain not to cut into the tumour, which there was every reason to believe was adherent round the orifice of the last tapping. As a rule, it is advisable to open below even when the above condition is not present. The interval between the peritoneum and the tumour is much more easily found below, where the abdominal walls are reflected from the margin of the tumour to the pubes, than above, where tumour and abdominal walls are closely applied. When the peritoneum was slit open the expected adhesions were found to exist, but they were easily torn loose. Spencer Wells's large hollow trocar and canula, with gutta-percha tube attached, was then plunged into the tumour through the fistula; but so very much softened had the adjacent portions of the cyst-wall become, that it tore like wet paper, permitting the glairy and semi-purulent fluid to flow over the tumour. This complication was promptly met, however, by pressure applied to the lateral abdominal walls covering the tumour, which effectually guided the wave of fluid through the lips of the wound. By this prompt action but little of the escaping fluid entered the cavity of the peritoneum. Most of the cystic contents were evacuated in this way. An immense quantity was thus expressed, most of the other large cysts seeming to communicate with this opening. Indeed, at the last tapping a long canula and trocar had been used and projected in several directions, with the view of effecting just such a communication in order to make the tapping the more effective. After the fluid ceased to flow the usual exploration was made, and the tumour was found tightly and extensively adherent to the abdominal walls on each side. The mass was still so large that it became at once evident that an extension of the incision in the abdominal walls would be required. The incision was, therefore, at once continued upwards and around the umbilicus to about two inches above that point. It was then found that there was also one point of adhesion to the omentum. This was easily separated, and so were the far more extensive lateral connections already mentioned. In performing this part of the operation, particular care was taken to effect the separation at the expense of the cyst-wall, rather than the normal tissues; and the separation was effected with much less trouble than had been anticipated. The tumour was then turned out of the abdomen, and found to be connected with the right broad ligament, by means of a pedicle about two inches broad and about three-quarters of an inch thick. It was quite long enough for clamping, and one of Mr. Spencer Wells's clamps was provided, in case enucleation, which had been determined on, was found inadvisable. Insinuating the index finger through

the middle of the pedicle where it joined the tumour, the operator succeeded with perfect ease in carefully peeling each portion with its vessels from the surface of the former, and in a very short time the whole mass was everted without the loss of half a drachm of blood, and the shreddy pedicle was dropped back into the abdomen. There was some little hemorrhage during the operation, but it was mostly venous and from the abdominal walls, the veins in that position having been considerably distended, probably from the pressure of the tumour on the ascending cava. What fluid and blood had settled into the pelvic and abdominal cavity were carefully sponged out. The womb, the remaining ovary, and the other parts were examined and found perfectly healthy; and the wound was closed by silk sutures extending through all the thickness of the abdominal parietes. The line of incision was then glued up with Richardson's colloidal styptic; the abdominal walls were supported with long strips of adhesive plaster running across the wound, and extending well round the flanks, and the line of incision was covered with a piece of lint soaked in carbolic oil (1 part carbolic acid to seven of olive oil).

The patient was then conveyed from the operating table and placed on her back in bed.

She recovered readily from the chloroform, and did not seem to suffer any marked degree of surgical shock. Pulse, one hour after the operation, 120; skin almost normal; mental condition natural.

Tumour weighed, after evacuation of fluid, 16 lbs.; estimated weight of fluid lost during operation; say 8 lbs.; total estimated weight, 24 lbs. Examination by microscope and otherwise shows usual structure of the multilocular ovarian tumour.

The patient progressed favourably. On the tenth day the stitches were removed; union firm along the whole line of incision, except at one point, where a little suppurative action had occurred. An alum wash reduced this in a day or two. An abdominal waistcoat was applied to support the line of adhesion.

Dec. 1st. Progress very rapid and uncomplicated; patient sat up on the thirteenth day in bed, and was about her room on the eighteenth day. Afterwards continued to improve on cod-liver oil, quinia, and iron. A dull pain in the lower abdomen, felt after the operation, disappeared by degrees. She fattened remarkably, and on the fortieth day menstruated.

At the present writing, more than four months since the removal of the tumour, she is in perfect health.

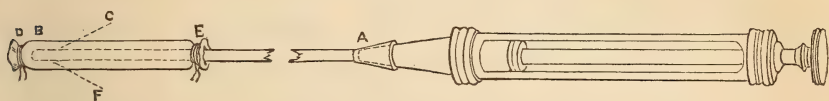
ART. XII.—*Description of an Intra-uterine Medicator and Uterine Insufflator.* By H. CULBERTSON, M.D., Assistant Surgeon U. S. A. Retired. (With 2 wood-cuts.)

IN February, 1871, I presented to the Muskingum County Medical Society the following described instrument, which has been useful in my hands and may aid others in the treatment of diseases which require intra-uterine medication.

The instrument is composed of a small syringe, accurately fitted to a

gold or pure silver tube, *A B* Fig. 1, five inches in length, enlarged at its proximal end, to receive the point of the syringe. The internal diameter of this tube is one-sixteenth of an inch, or may be less if desired. Its walls are thin. The distal end *B* is open and rounded so as not to cut. *E D* is a portion of No. 1 French rubber tubing about one inch in length, the distal end of which is ligatured at *D*, and the tubing placed on the silver-tube, and secured to it at *E*, with a fine silk thread. Four longitudinal rows of very small perforations are made upon the sides with the finest cambric needle, taking care to avoid the seam of the tubing, and to perforate the rubber obliquely in the direction of the line represented at *F*. The metal tube can be bent to any curve desired.

Fig. 1.



The following is the manner of using the instrument. Having filled the syringe with the warm medicated fluid, and attached the tube to it, the piston is pushed down until the fluid distends the tubing and appears upon the surface of the rubber—notice the force applied to the piston in the act. Taking the finger from off the piston the rubber will return to contact with the silver tube; wipe off the fluid from the surface of the rubber, oil the latter, hold the body of the syringe (do not touch the piston now) pass the distal (rubber) end of the instrument into the cavity of the uterus, press the piston down gently, and move the now slightly distended tubing over the endometrium. When the application has been completed, remove the finger from the piston, the rubber will again come in contact with the metal tube and the instrument can be readily withdrawn. Finally, detach the silver tube from, and empty the syringe and fill it with water, re-attach the tube to the syringe and wash the tube and rubber clean for future use. It will be found that but little fluid has been consumed in the application.

We claim for this instrument the following advantages:—

1. It is not expensive.
2. So little fluid is thrown into the uterus (and this is so spread over the surface of the rubber, thus gaining the greatest benefit from the smallest quantity of the medicated agent) that the danger of intra-uterine applications is greatly diminished by the use of the instrument.
3. The rubber tubing expands and allows the medicated fluid to be applied to the inequalities of the uterus.
4. Should any jet be projected, the direction will be towards the mouth of the uterus (the tubing should not be perforated on the distal end), and hence the danger of the fluid passing into the Fallopian tubes is diminished.

5. The bulk of the tubing is so small that it is scarcely ever necessary to employ a tent before using the instrument.

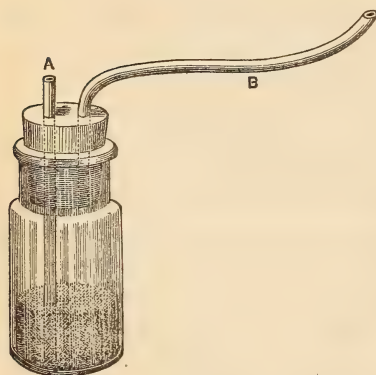
We have used iodine and carbolic acid and glycerine and other medicines by the aid of this instrument without any unfavourable symptoms. In the employment of these agents it has not been necessary to apply a new rubber often, although it may be requisite to re-perforate the tubing.

The tubing is about one-eighth of an inch in diameter and may be procured of Samuel S. White, Twelfth and Chestnut Streets, Philadelphia, Pa. The instrument could be improvised with the tubing and a small catheter, and with a small bougie (end cut off and waxed), we have employed the invention, successfully, in the treatment of gonorrhœa.

In the latter disease the urethra is distended and all its folds are thus medicated.

Uterine Insufflator.—June 1, 1871, we presented to the Muskingum County Medical Society, the following described instrument, which consists

Fig. 2.



of the rubber balls and tubes which form a part of Richardson's spray-apparatus, the tube being attached at *A*, Fig. 2. The appliance further consists of a wide-mouthed, half or one ounce vial, to which is fitted a cork, perforated with two silver tubes, *A*, reaching to near the bottom of the vial, and *B*, eight inches in length, and merely passing through the cork. Both tubes are throughout three-sixteenths of an inch in diameter, and securely cemented in the cork. The powder (fine) is to be placed in the vial. On forcing

the air, by the aid of the Richardson bulbs, through the tube *A*, the powder is caused to pass along and out of the tube *B*, and thus reaches the diseased surface. We have used this apparatus often, successfully, employing various powders, as pulv. plumbi acetas, tannic acid, etc., either in the uterus or vagina. We have also used it with good results in hemorrhage of the rectum from sloughing.

Should the ends of the tubes *B* or *A* become obstructed, a hair-pin will soon remove the plug. It has not become clogged in my hands in intra-uterine or vaginal insufflation.

ZANESVILLE, O., April 16, 1873.

ART. XIII.—*Amputation through the Knee-joint.* By G. ERICKSON, M.D.,
of Kendallville, Indiana.

MAY 8, 1872, A. G., railroad employé, æt. 22, of good health and habits, had his right leg crushed by a railroad car-wheel. In falling he struck his side against a pile of railroad iron, injuring him internally at the same time. It was two hours before I saw him, when he was suffering severely from shock, the combined effects of the direct injury, and subsequent loss of blood, which had been great.

It was sixteen hours before reaction was sufficiently established to warrant amputation.

The knee-joint was found to be the lowest practicable point to amputate. A long anterior and a short posterior flap were made, the patella brought down between the condyles of the femur, and after all oozing of blood had ceased the wound was closed in the usual way. For a week he continued weak and prostrated with a severe pain in his side, which troubled him more than his leg. On May 10th pleurisy supervened from the injury in falling on the railroad iron. On May 15th he had a chill, with very severe pain in the stump, with a thin fetid sanguineous discharge, and a gray indolent appearance of the wound. Pain in his side, and cough very much increased at the same time.

Pulse for the next ten days ranged from 125 to 145 beats per minute, and feeble. At the end of the third week he began gradually to convalesce, but there was still some subacute pleurisy with effusion within the pleural cavity, which afterwards was entirely absorbed. At the end of two months the wound was entirely healed, with an excellent stump, the patella being firmly adherent to the condyles of the femur, where it had been placed.

The internal injuries not only delayed the healing of stump, but came very near producing a fatal result. He has been wearing an artificial limb for the last five months, the stump remaining in a good condition. The constitutional treatment consisted of stimulants and a nutritious diet in as great quantities as he could digest. When the chill occurred, and he showed symptoms of pyæmia, large doses of quinia were given every two hours during the first day after the chill, as an anti-suppurative, as recommended by Billroth and others, and then gradually diminished. Thorough ventilation and cleanliness were rigidly enforced, no cloths were allowed to be applied to the stump the second time until thoroughly washed in carbolic acid water, and well aired. The local treatment was water-dressing, at a temperature ranging from 55° to 60° Fah., which was the most agreeable to the patient. On the 15th, when the wound assumed a gangrenous condition, the stump was wrapped in cloths saturated with turpentine, and continued on for six hours, with the effect of arresting the sloughing. Afterwards it was applied by sponging the wound with it three or four times a day for a week, when the wound assumed a healthy condition.

The turpentine was very prompt in arresting the sloughing, diminishing the pain, and giving the wound a more healthy appearance. At no time did it produce any disagreeable feeling to the patient.

The sloughing occurred principally on the inner side of the stump, but was nearly filled up by granulations so as to leave a good protection to the bone. The ends of the flaps united firmly, leaving but a very small

ciatrix, so far back that it will be entirely out of the way of the pressure of an artificial limb.

It remained perfectly sound to December, when I last saw it. In answer to my inquiry in regard to the patient's condition, the following note dated May 16th received from him may be of interest as giving the satisfactory result in his own language.

"*Dear Sir* :—I commenced to attend the railroad target on Sept. 1, 1872, and have continued to do so up to the present time. The stump has remained healed and sound since it first healed up in July last, and has given me no trouble since whatever.

"On Jan. 17th, 1873, I commenced to wear an artificial limb and have worn it every day since, being able to walk without cane or crutch. I have not lost an hour's time, since I commenced work last Sept., on account of the stump."

ART. XIV.—*On the Oxytocic Properties of Quinia.* By S. HIRAM PLUMB, M.D., of Red Creek, N. Y.

As there has been considerable discussion recently in the medical journals in regard to the question whether quinia possesses oxytocic properties, I am induced to contribute my mite towards its solution. So far as it has come under my notice, the argument thus far amounts to this: One asserts positively, "I have given quinia in cases of lingering labour with a view to oxytocic results, and have obtained them; therefore quinia must and does possess such properties." Another replies negatively, "I have practised medicine in a malarious section of country for many years, and have given a great deal of quinia to pregnant women without producing abortions or premature labour, and therefore quinia cannot and does not act as an oxytocic."

Now the first step towards a solution of this question, as in so many others, is to clearly understand the meaning of the terms employed. An oxytocic is defined to be "a medicine which promotes delivery," not as a medicine which *induces* delivery. Between inducing the parturient effort in a gravid uterus quietly carrying its burden through its appointed term, and promoting that effort when the term has been completed or disturbed, there is a wide difference; in the one instance the normal function of the womb is passively to retain and nourish; in the other actively to contract and expel. Medicine, the effect of which would be as a *tonic* to brace and sustain the system in a normal, healthy condition of vital action, would not *induce* labour, but would *promote* delivery.

Without doubt ergot is generally regarded as the standard or representative oxytocic. And what are the facts in regard to ergot? Simply this, that given in labour it has the power to so augment the uterine contraction as to hasten the process; in other words, to "promote delivery." And thus when judiciously employed it not only saves valuable time to the attending physician, and hours of needlessly prolonged suffering to the

patient, but may save an unborn infant from threatened death from suffocation, or a mother from a death impending through exhaustion, or flooding. This result we obtain from ergot, given under such conditions, with probably as great a degree of certainty as we get the peculiar and desired effect of any other active medicine when appropriately administered.

But ergot by no means possesses an equal power of originating or inducing parturition; and fortunate is it for the human race that such is the fact. Other uses and effects of ergot need not enter into this question. Suffice that it has such, and at this day it would not be regarded as good logic to say, that, because it subserves other purposes, and when administered for these does not first inevitably empty the womb, therefore it is not an oxytocic. Neither, I submit, is it logical to argue, that, because quinia can safely be given to patients in the gravid state, therefore it has no oxytocic properties.

For more than 25 years I have practised medicine in a malarious district, and have very often administered quinia to women in pregnancy without any ill results; in fact I more fear that a continuance of chills and fever would provoke abortion or premature labour, than that the quinia required to arrest the chills would do so. For more than 15 years I have also given quinia as an oxytocic, commencing to use it in cases of labour in patients enfeebled by malarial disease; and, finding that it not only sustained the patient, but *seemed* to promote delivery, continued the practice until fully convinced that it *did* promote delivery, and then gave it for that purpose alone in cases of lingering labour, in patients not depressed by malaria. One such case permit me to recite:—

February 26th, 1869, I was called four miles from town to attend a lady in her third confinement, and who had been similarly my patient in her former labours, the first of which was severe and the second easy. A few minutes after my arrival at the house, under a slight pain she had a copious gush of blood; making an immediate examination, I found myself confronted by “placenta prævia.” Having nothing more reliable at hand, I administered at once about three grains of quinia, and sent a messenger to my office for ergot and my instruments. The womb responded promptly to the quinia and manipulation; there was but little more hemorrhage, and before the return of the messenger the labour was so far advanced and the contraction so firm that she was promptly and safely delivered without the use of ergot or instruments. The child was so exsanguinated that it gave only a few feeble gasps, and all efforts to resuscitate it were unavailing; the mother’s recovery was good.

I think, under quinia, the labour pains preserve their natural intermittent character, and do not become a constant pressure, as under the influence of ergot.

I now administer quinia in my practice as an oxytocic probably quite as often as ergot, and with nearly the same certainty of its fulfilling that condition.

RED CREEK, May 16th, 1873.

No. CXXXI.—JULY 1873.

TRANSACTIONS OF SOCIETIES.

ART. XV.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1873. Jan. 15. *A case of Foreign Body imbedded in the thigh four years and nine months.*—Dr. SAMUEL ASHHURST read the following report of a case of this :—

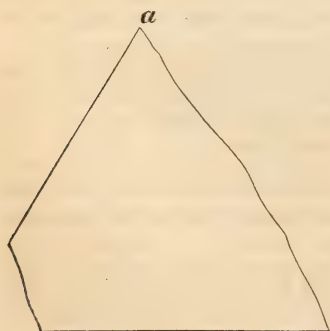
On the 22d of October, 1872, G. W., aged 25 years, of good previous health and habits, presented himself to my notice at the Episcopal Hospital with a small indolent ulcer immediately beneath Poupart's ligament of the left side, exactly in the fold of the groin, within three-quarters of an inch of the spine of the pubis. Its appearance gave the impression at once that it was caused by a foreign body, and upon introducing a probe it came in contact with what appeared to be a sharp edge of bone, which, upon further examination, could be felt distending the skin for nearly an inch below the ulcerated point. The patient stated that three weeks previously he had had a severe hemorrhage from the ulcer, and as the fragment seemed quite loose, in view of its proximity to the femoral vessels, I advised its immediate removal.

Wishing to consult with his friends he decided to defer any operation for a few days, and went out with some strips of adhesive plaster firmly applied over the part in the hope that, by confining the foreign body, further injury to the surrounding tissues would be prevented.

On the 24th of October he again presented himself, saying that he had been at work in the interim, and had been made much more comfortable by the straps—in fact he had been so much relieved by them that his friends strongly opposed any operative interference, and his coming into the house was in the face of their protest. He stated that four years previously he had cut himself severely over the tuberosity of the left ischium, and it seemed possible that the offending substance might be an exfoliation which had travelled from that region.

Ether was administered and an incision an inch and a quarter long was made through the skin, when immediately the cause of the trouble appeared projecting from the wound, it being the piece of glass herewith exhibited. (See figure.)

The four sides measured respectively half an inch, an inch and a quarter, an inch and a half, and an inch and three-quarters. The part marked (a)



presented, being pressed forward with considerable force by the muscles beneath, and some difficulty was experienced in removing it entire, it being very firmly held by the adductor magnus, for as I was entirely ignorant of the size and shape of the body, I disliked to use force. A safe delivery was, however, at last effected with the aid of some deep incisions, and search was made for other fragments but none were found. I then ascertained that the wound over the tuber ischii, of which he had spoken, was received on the night of January 4th, 1868, being caused by his falling through a sky-light while on duty as a fireman; there had been profuse bleeding at the time of the accident, but the wound had been sewed up by the physician who attended him, who detected no foreign body, and the extraction of the bit of glass, after its interment of four years and nine months caused quite as much surprise to the patient as to any one. On October 29th he was discharged cured.

This case repeats the oft told story of the wonderful tolerance sometimes exercised by the human body of foreign substances imbedded within it; it also, again, enforces the necessity of searching wounds for foreign matters when there is anything in the history of the case to make their presence at all likely, for it can hardly be questioned that our patient passed nearly five years in danger of serious injury from so large and sharp a substance. That he escaped any mishap can only be regarded in the light of a very fortunate occurrence.

Dr. Keating spoke of a case, recently under his observation, in which a needle was imbedded in the tissues of the hand, and asked how far surgeons were justified in examining wounds for such foreign substances.

Dr. John Ashhurst, Jr., thought that this depended upon the position and condition of the wound. In a recent wound, unless the presence of the needle is made manifest by an indurated line, or in some other way, the examination should be limited; if suppuration has been established, a more extended exploration may be made, for, even if the foreign body is not found, a free incision will be of benefit.

Hypodermic use of Ergotin in the treatment of Uterine Fibroids and Hæmoptyses.—Dr. KEATING, in answer to some inquiries from various sources, communicated to the college his experience of the hypodermic administration of ergotin in submucous uterine fibroids as suggested by Prof. Hildebrand, of Königsberg. Although it might be premature, as yet, to speak of experiments which were not completed, yet there were certain results he had already obtained, which he deemed eminently useful and practical.

In one case of uterine submucous fibroid, after the sixteenth hypodermic injection, the uterine tumour had been reduced, by measurement, to one-third of its size, had been forced down upon the cervix uteri, and was evidently endeavouring to force itself through the os uteri. Dr. Keating was prepared to assist its spontaneous enucleation by making a slight opening in its investing membrane, which was tense and unyielding, but was forced to desist for the present from the impaired health of the patient, suffering from a complication of a serious anæmia consequent upon frequent and prolonged hemorrhage and an acute attack of the prevailing influenza. Superadded to this state of things was an annoying irritability of stomach and prostration, apparently to some degree the results of the constitutional effects of the ergotin.

In the above case, the sixteen hypodermic injections (of the following

strength: ergotin gr. xlv; glycerin, aq. destil., āā m̄v. Syringeful, or about twenty drops administered each time) were injected consecutively within the space of eighteen days. They were all applied over the abdomen below the umbilicus. Their application was always attended with excessive pain, the patient suffering for near an hour after the injection. With all this intense irritation caused by the introduction of the drug and the proximity of the injections to each other, Dr. K. was astonished to find that only one seat of the injections showed the slightest tendency to inflammation or formation of an abscess, this one spot caused the patient great pain for several days, and from its hard aspect, diffused inflammation, and hardened base, gave her attendant great uneasiness. Upon careful examination it was discovered that this injection was decidedly the most superficial; bearing this in mind all the others were made as deep seated as possible, and although the same intense burning pain followed each application, in not one instance was there even a threatening of an abscess. In considering this point, naturally Dr. K. conceived the impression that the more deep seated the injection, and the more the cellular tissue was avoided, the less tendency there might be to subsequent inflammation and formation of an abscess as sequelæ of hypodermic injections. He would beg leave to make this digression while on this point, and state that his subsequent experience with hypodermic injections in other cases, and with other drugs, have led him to believe that there were ample grounds for confirming his views on that point, and he would suggest its application in cases where such complications threaten.

In the first hypodermic injection the pulse, which was 76, increased fifteen minutes after to 90. Respirations also increased about 4. On the second day the pulse was, before the injection, 73, thermometer $98\frac{1}{2}^{\circ}$. In each succeeding injection the pulse fell, as also the temperature, until finally at the fifteenth injection the pulse stood at 56, respiration about 12, and the temperature remained at 96° . Subsequent to the sixth hypodermic injection, at the expiration of ten minutes, a violent constriction would take place around the heart, lasting about two hours, very annoying and alarming to the patient; sounds of heart very weak, laboured action, continued coldness of the extremities, with numbness. At the end of the twelfth injection a well defined chill came on every day, inappetency and a nausea which finally became so excessive as to cause all food to be rejected and to reduce the patient, previously exhausted by anæmia and influenza, to such a degree, as to force the suspension of further treatment. During the administration of the ergot there was a constant pressure of the tumour on the sacral nerves and on the bladder, and the patient herself fully realized her diminution in size and the descent of the tumour. The nausea and irritability of the stomach continued for some days after the cessation of the employment of the hypodermics, and as the introduction of the finger in the tense cervix uteri would at any moment produce an increased irritability of the stomach, it became evident that some of the abnormal condition of the latter organ was due to the engorging and consequent pressure of a portion of the tumour within the os uteri, a view which was confirmed by the immediate relief consequent upon suppositories of opium and belladonna inserted in the rectum. Since the discontinuance of the treatment and relief of the catarrhal and anæmic condition of the patient, all internal symptoms have disappeared and she herself is anxious for a renewal of treatment. Within a week of

the discontinuance of the hypodermic, a menstrual period supervened with excessive hemorrhagia; two hypodermic injections were administered with the same proportions of ergotin, which seemed in a few hours to exercise a complete control over the flow.

Dr. K. could not hesitate in announcing a confirmation of Prof. Hildebrand's results in the above case. Notwithstanding the partial application of the treatment, the unfavourable circumstances in the broken-down condition of the patient when it was employed, he could but trust that in the reduction of the tumour, the control of the hemorrhage, and the remarkable tolerance of the drug under the circumstances, there were conditions which foreshadowed the most important and the happiest results from the new method of treatment in a class of cases which hitherto had been the opprobrium of gynæcologists. We are on the eve of deriving the most important results from the employment of a drug, the nature of which has been almost confined entirely to midwifery. Dr. K. had derived the most happy results from its employment in hæmoptysis, rarely having recourse to any other remedy in such cases than the hypodermic injection of ergotin. In two cases of vicarious hemorrhage of the lungs he had immediate relief from the use of the ergotin, and, combining with its employment the local action of the galvanic current, had succeeded in bringing on the natural menstruation; in one case after a suspension of four years, in another after one year of constant irregularities.

Dr. K. would take some other occasion of giving to the College his results from the hypodermic employment of ergotin, and also its internal use in cases of chronic engorgement of the os and cervix uteri, of hypertrophy, or from subinvolution of the uterus, and in cases of chronic flexions of the uterus of years' standing, where, with the employment of ergotin and local application of galvanism, he had effected perfect cures, enabling the patient to dispense with the use of pessaries, which at best are necessary evils.

In reply to a question of Dr. John Ashhurst, Jr., Dr. Keating stated that the needle was introduced at the border of the linea alba, and the point carried down to the muscular structures. In this way he was of the opinion, he avoided the tendency to inflammation which exists when the needle is merely passed into the cellular tissue.

Dr. John Ashhurst, Jr., spoke of the employment of hypodermic injections of ergotin in the treatment of aneurisms.

Dr. Samuel Ashhurst had used ergot in a case of purpura hemorrhagica; he thought the deep injections less liable to provoke inflammation on account of their being less exposed to injury.

Feb. 5. Meteorology and Epidemics of Philadelphia.—Dr. WM. L. WELLS read the following report:—

From the record of the temperature kept at the Pennsylvania Hospital, it appears that the average for the year was $54^{\circ}.66$, or about a degree higher than the mean for 48 years, the period during which meteorological observations have been regularly kept at that institution.

In 1872 the warm months were all warmer and the cold months all colder than usual. The most remarkable of these warm months were May 68° , 6 degrees above the average; June $4\frac{1}{2}$ above the average; July 82.3° , nearly 6 degrees above the average, and warmer than the warmest previously experienced in the last 48 years; and August 81.6° , $7\frac{1}{2}$ degrees above the average, and warmer not only than any previous

August, but also warmer than any July in any preceding year; it was however, a little more than half a degree below July, 1872.

As a consequence of this excessive heat of summer, we find an enormous increase in the fatality of those diseases which are more prevalent in hot weather, and above all, in cholera infantum. The total mortality from this cause was 1666; 837 more than in 1871, and 664 more than in 1870; which was, it may be remembered, a remarkably hot summer; hotter than any except that of last year alone. The mortality from cholera infantum in 1872 was 1080 in July; 324 in August; 143 in June; and 59 in September, the average temperature of this last month being 70° , $3\frac{1}{2}$ degrees above the average.

The deaths from sunstroke were 136, to 11 in 1871, and 52 in 1870. Of this unprecedented number, only 10 occurred in persons under 20; 28 died between 20 and 30; 32 between 30 and 40; 33 between 40 and 50; 10 between 50 and 60; 21 between 60 and 70; and only 2 over 70 years of age. There were, as is always the case, many more men than women; this excess being of course attributable to their being more exposed as a rule to the excessive heat by being obliged to walk or labour in the sun. The same reason is, no doubt, the cause of the greater mortality in adults as compared with the young.

The heat of our summer months very seldom causes any increase in the mortality of adults; but, in July of the past year, the mortality was very much increased even among adults, being nearly twice that of June, and greater than that of any other month, except January alone, when smallpox was at its height.

In 1872, there were reported 20,544 deaths; 2962 more than in 1864, which until last year showed a greater mortality than any previous year.

The great mortality of 1864 was caused chiefly by the deaths among soldiers, which amounted to 1598. In 1872, the excessive mortality was caused to a great extent by the epidemic of smallpox, but not by that alone, for although there were comparatively few deaths from some other zymotic diseases, more especially scarlatina, yet the deaths from other causes, not zymotic, were fully up to the average, and the deaths from diseases of the digestive system exceeded by nearly a thousand those of the preceding year.

In 1872, there were 3551 deaths more than in 1871, nearly 21 per cent. The mortality was one in 37, or 2.7 per cent of the population.

The total deaths under one year were 5862, of which 1221 were caused by cholera infantum alone, an unprecedented number. Marasmus caused 497; convulsions 462; smallpox 347; and pneumonia 267.

Among children between one and two years of age, most died in July, viz., 416; and next in August, 231. After this age the influence of cholera infantum is scarcely felt, for while 413 died of it between one and two only 32 died of it in the next three years. Smallpox caused 188 deaths between one and two years, coming next to cholera infantum; while under one year, smallpox came fourth in the list, as we have just seen; and from 2 to 20 it is first; between 2 and 5 years it caused 446 deaths, while croup (which next to it was the most fatal disease) caused 154 only. Diphtheria was most fatal between the ages of 1 and 5, causing 95 deaths, the total number from that cause being 150; between 5 and 10 smallpox caused 293 deaths, while croup (still next to it in fatality) only caused 44, and the total mortality was 782; between 10 and 15

smallpox caused 152 to 423 from all causes and between 15 and 20 it caused 195 to 685 for all causes. It will thus be seen that between the ages of 5 and 20 more than one-third of all the deaths were from smallpox alone, thus showing that it did not spare even those years of life which are usually most of all free from diseases.

Although it is thus seen that smallpox did not by any means spare the healthiest period of life, yet after the age of 20 we find for a few years a slight increase in the mortality from that disease; nothing, however, in comparison with the increased mortality from other causes. From being the most fatal disease, it steps into the second rank; phthisis passing above it, and retaining that position at all subsequent periods of life.

The deaths from phthisis between the ages of 20 and 30 (at which period this disease causes the greatest mortality) were more than one-third of the total mortality. The proportion which the deaths from phthisis bear to the total mortality were not much altered even by the presence of the great epidemic of the past year.

The total deaths between 20 and 30 were 2163; 733 for phthisis and 474 from smallpox. Then follows enteric fever which caused 97 deaths, this disease showing its full power at this period; pneumonia and disease of the heart come next, causing 79 and 64 deaths respectively.

Between 30 and 40 the deaths were 1892; in numbers a slight decrease, although relatively to the number alive at that period a slight increase over the preceding ten years. Next to phthisis and smallpox came pneumonia 93; disease of the heart 83, and enteric fever 60. This last disease after this diminishes in force, while the two preceding go on increasing.

Between 40 and 50 the total mortality was 1497; next to phthisis 355, and smallpox 144, came pneumonia and disease of the heart, each 86; then cancer 72. This last disease here first comes into prominence, as well as apoplexy and paralysis, which together produced 62 deaths.

Between 50 and 60 the total mortality was 1178; next to phthisis, 190, came pneumonia 89, and disease of the heart 84; apoplexy and paralysis together 81; and cancer 76. Smallpox only caused 65 deaths, falling to the sixth rank.

Between 60 and 70 the total mortality was 1139, very nearly the same as in the preceding 10 years, and of course far more proportionally to the number of persons alive at those periods of life. Phthisis caused 126 deaths. Apoplexy and paralysis together caused 119 deaths; pneumonia caused 81 deaths; disease of the heart 80, and cancer 63; smallpox only caused 35 deaths; 125 deaths are in this period ascribed to old age and debility, rather uncertain terms, which may be looked upon more as predisposing, than as direct, causes of death.

The total deaths between 70 and 80 were 991, a little less than half of those between 20 and 30, but when considered in reference to the proportion between those alive at 20, and those alive at 70, three times as many; 283 deaths are ascribed to old age and debility; 117 to apoplexy and paralysis; 57 to disease of the heart; 54 to phthisis; 51 to pneumonia; 35 to cancer; 17 to congestion of the brain, and only 7 to smallpox.

The total deaths between 80 and 90 were 530; 305 of them from old age and debility; 37 from apoplexy and paralysis; 32 from pneumonia; 15 from disease of the heart; 14 from phthisis, and 8 from cancer.

Of the 110 deaths over 90, 88 are ascribed to old age and debility.

We thus find succeeding each other as the most fatal diseases, cholera infantum from birth to the age of 2 years, smallpox from 2 to 20; phthisis from 20 to 70; and then apoplexy and paralysis as the most fatal diseases in the very old.

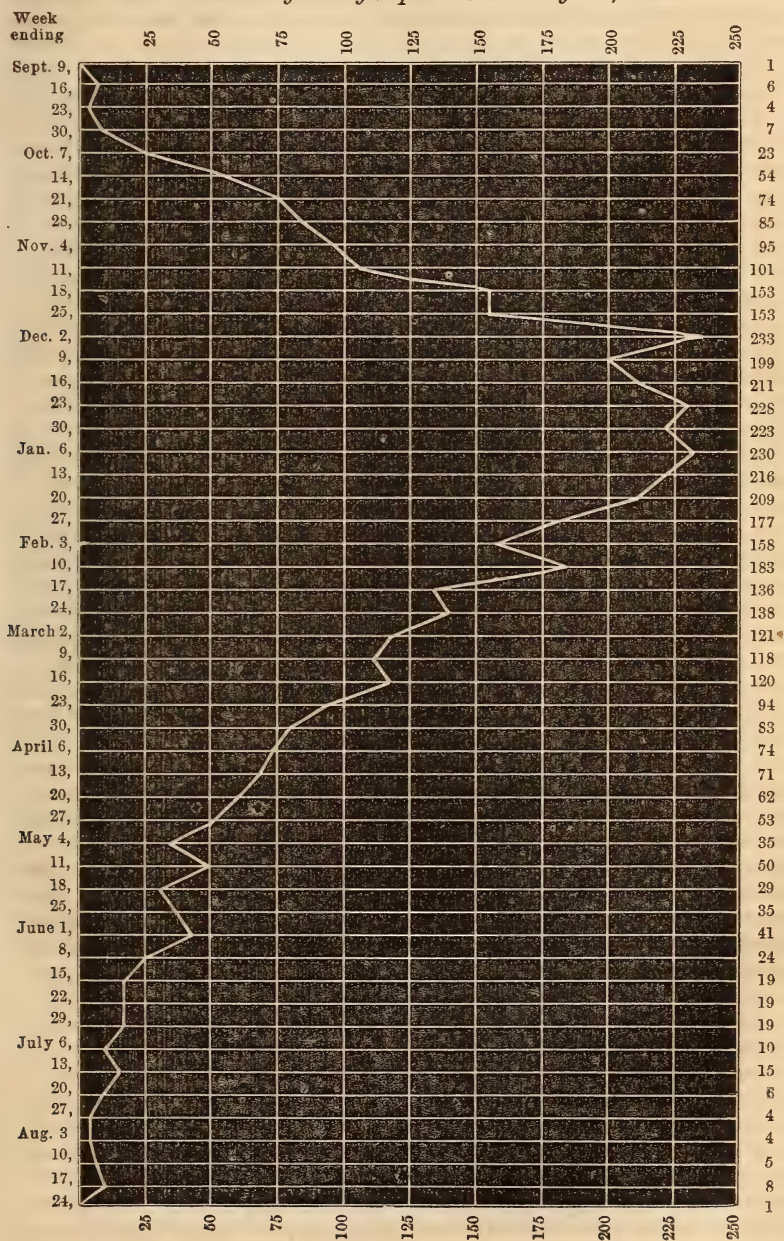
Of persons over 60 years of age the greatest number died in July, viz: 352; next in January, 294; then in May, 253. The least mortality was in November, 165. November was also the healthiest month in the very young, as only 217 children under one year died in it, or not much more than one-seventh of the mortality in July, and of children between 1 and 2 only 47 died in November, only a ninth of the deaths in July, viz: 416. The mortality of children under one year, although specially increased by very hot weather, is nevertheless, as is always seen, excessive at all seasons; while between one and two years, although the morbid susceptibility to heat continues to a certain extent, yet the mortality from other causes than cholera infantum is not much more than a fourth of that of children a year younger. The period of life between 5 and 20 remained remarkably healthy in spite of the epidemic of smallpox, and that part of this period which is between 10 and 15 was the most healthy of all periods of life.

In looking upon the late epidemic of smallpox as a whole, extending into two years, we may consider it as lasting just one year (from September, 1871, to August, 1872, both inclusive), for in the last week of August, of both 1871 and 1872, there were no deaths from that cause, and, although in all in the eight preceding months of 1871 there were 29, and in the four succeeding months of 1872, 18 deaths, yet these numbers are so small that I think we are justified in looking upon the epidemic as of just one year's duration; in which year we find the unprecedented number of 4417 deaths from smallpox alone. In comparing this with previous epidemics, we find not only the total number of deaths far greater, but that there were more deaths in each one of the four months from November, 1871, to February, 1872, both inclusive, than ever before in any one year. The epidemic of 1824, when the mortality was 330 in a population of about one-fifth the present population of this city, was represented in my last report as being nearly equal in severity to the epidemic of 1871. When, however, we compare it with the epidemic of 1872, it falls far behind it; and still more when we compare the entire periods of the two epidemics, for both of them extended over portions of two years. In 1823 there were 160 deaths, and in the whole epidemic of 1823-4, 490 deaths. This multiplied by five, for the purpose of comparison with the present increased population of Philadelphia, will not give so many deaths as in the one year 1872, and not much more than half the deaths in the whole epidemic which has just passed away.

When we look at the course which smallpox took during the whole period of its reign here, we find that it occupied only three months in attaining its maximum at the end of November. During December the number at first sank, and then rose again to 230, only 3 less than in the week ending the 2d of December, which was the week when the disease was at its height. From the 6th of January, 1872, when the number of deaths began decidedly to decrease, seven months passed away before smallpox, which took only three months to rise, had again fallen to only one death in a week.

The following diagram shows the progress of the mortality from smallpox in this epidemic visitation:—

Diagram of Deaths per week from Smallpox in Philadelphia, for the 12 months beginning Sept. 1871 to Aug. 24, 1872.



Although smallpox had such a definite course and has come thus completely to an end in Philadelphia, yet in many other places it lingers on; both in England, where it began as an epidemic more than six months before its beginning here, and also in this country, both north and south of Philadelphia, in Boston, Brooklyn, and Baltimore. On the continent of Europe it is reported as spreading into the north of Russia.

In Philadelphia, taking the total mortality from smallpox in the two years, 1871 and 1872, viz., 4464, we find that 556, or about one-eighth, were of children under one year. This, when compared with statistics taken in England, shows a rather small proportion of very young children here; for it was found that of 42,227 deaths from smallpox in England from 1856 to 1865, 10,223, or nearly one-fourth were under one year.

In reference to the protective power of vaccination, the only statistics which are available are those of the municipal or smallpox hospital; and these show its protective power, but observations taken on the largest scale in Europe are more conclusive than anything we have in this country, as for example in Bohemia, where in 21 successive years, observations were taken in the whole country, showing that of cases of smallpox contracted after vaccination only $5\frac{1}{16}$ per cent. died, while of the non-vaccinated $29\frac{4}{5}$ per cent. died. Also observations made in England on 50,000 children in the schools showing that of every thousand not vaccinated, 360 were scarred with smallpox marks, while of those vaccinated only 1.78 had such scars.

Cholera has not visited us (for we may overlook the 16 deaths in the past year, as insignificant in a population like ours), and it does not even present a more threatening appearance than at the close of 1871. It remains in Russia, attacking first one part of the country and then another, extending more or less from the north to the Black Sea, and oscillating more or less in its attacks. In St. Petersburg it was reported that one-fourth of the cases died.

A good deal of influenza and more cases of pneumonia than usual have been seen here in the autumn and winter.

An attack of influenza began among the horses of Philadelphia about the 27th of October, and proved universal. It was very serious and of a typhoid character, followed for some time by great debility and liability to pneumonia and dropsy, and attacking nearly all the horses almost simultaneously. A yellowish discharge from the nostrils usually accompanied it. It had attacked most large cities to the north of us before it came here; those to the south being attacked subsequently. Comparatively few cases proved fatal, unless overworked or exposed to cold.

March 19. On the Hypodermic Use of Ergot or Ergotine in the Treatment of Uterine Fibroids.—Dr. JOHN ASHHURST, Jr., referred to the interesting remarks made by Dr. Keating at a previous meeting of the College (see page 131), upon the employment of ergot by the hypodermic method in cases of uterine fibroid, as recommended by Prof. Hildebrandt, of Königsberg (see *American Journal of the Medical Sciences*, October, 1872, p. 567), and gave some details of a case which had been thus treated at the Episcopal Hospital, and which, as far as a single case could, confirmed the deductions of those gentlemen as to the value of this mode of medication. Dr. Ashhurst's patient was suffering from a submucous fibroid tumour, developed in the anterior wall of the uterus,

and when she came under Dr. A.'s care was just recovering from an attack of peritonitis which had followed an unsuccessful attempt to remove the growth by means of an *écraseur*. The fluid extract of ergot (or ergotine, as it is sometimes called) was employed according to the following formula: R. Ext. ergotæ fluid. f3iss; glycerinæ f3j; aquæ f3ij. Of this preparation twenty minims, containing nearly seven minims of the fluid extract, were used at each injection, and the injections were, unless omitted from some special reason, made once daily. The point of injection was invariably in the sub-umbilical region, on one or other side of the linea alba, and care was taken, as recommended by Dr. Keating, that the nozzle of the syringe should be carried fairly down to the level of the muscular parietes. After sixteen injections had been administered, a vaginal examination was made, and it was found that, as nearly as could be estimated, the tumour had diminished in size by one-half. It was intended to wait for a week or ten days, and then to begin another course of injections, from which it was hoped that, at some future time, still further improvement could be reported.

Dr. Ashhurst remarked, as a matter of interest, that in his patient (unlike Dr. Keating's) no unpleasant constitutional symptoms whatever were produced by the hypodermic use of ergot; on the contrary, during the whole course of treatment, the patient daily gained in health and strength, and passed through a menstrual period (during which the treatment was of course suspended) without any undue loss of blood; and although when questioned she said that the use of the syringe was always followed by some hours of pain at the point of injection, yet the pain was never so great as to induce her to make any spontaneous complaint.

On Iodoform as a Topical Application to Venereal Ulcers.—Dr. JOHN ASHHURST, Jr., also mentioned that he had been using iodoform lately, in a number of cases of chancroidal and of syphilitic disease, with very gratifying results. The preparations employed, beside the drug in powder, were those recommended by Dr. Izard, and by Dr. Damon, of Boston, viz., an ointment (R. Iodoformi ʒiss; adipis ʒj), and a solution in glycerine and alcohol (R. Iodoformi ʒiss; glycerinæ f3vj; alcohol f3ij). The latter was preferred so long as the discharge from a venereal sore was profuse, the powdered drug being applied to the ulcers in their later stages, while the ointment was reserved for cases of unopened chancroidal bubo, and of unulcerated gummatous tumour. In the treatment of chancroids, Dr. Ashhurst had continued to make at the beginning one thorough cauterization with nitric acid, and in the treatment of syphilitic ulcers had of course not neglected to direct suitable constitutional treatment, at the same time that he had employed iodoform as a topical remedy. From the results which he had obtained, he was disposed to think that iodoform would prove a valuable addition to the surgeon's repertory in the treatment of all varieties of venereal ulcers. He did not think that iodoform, at least in its external applications, possessed any anti-syphilitic virtues; he regarded its action as entirely of a local character.

Dr. W. S. W. Ruschenberger stated that he had employed iodoform for the past three years both internally and externally, with the most satisfactory results. He had used it in phagedenic ulcerations and also in carbuncle. When applied in substance he thought it should be in a

state of very fine powder, otherwise it would, in some cases, provoke irritation. The ointment (iodoformi ℥j; ol. theobromæ ℥ss) was a favourite preparation with him.

Dr. Edward Hartshorne inquired whether Dr. Ashhurst had observed, in the cases treated by him, any symptoms of iodism. Iodoform contains so much iodine (about nine-tenths) that it might be apt, when employed as freely as stated, to produce the constitutional effects which are sometimes noted in the use of iodine and of iodide of potassium.

Dr. Ashhurst said in reply that he had not observed constitutional effects in the cases under his care; he added that he was somewhat skeptical on the subject of the absorption of medicines from suppurating surfaces, and mentioned that he was in the habit of dressing amputation wounds with pure laudanum, using it in large quantities and for a number of days consecutively, without the occurrence of any symptoms indicating constitutional implication; he doubted whether under such circumstances, any appreciable amount of the drug was absorbed.

Dr. Ruschenberger stated that he had administered iodoform internally in one-grain doses, and had not observed symptoms of iodism in any instance.

Dr. J. S. Parry had employed iodoform internally in cases of inherited syphilis, in children from three to twelve years of age, continuing its administration from one month to six weeks—in one case he administered the remedy for six months. In these cases he failed to observe any good results follow its use. In one case of nervous palpitation of the heart the patient was materially benefited by one-grain doses three times daily—symptoms of iodism did not occur in any case.

Deep-seated Abscess in the Neck.—Dr. WALTER F. ATLEE related a case of this which he had seen that afternoon in consultation. The patient, a young man of twenty-five, had had for some time a large circumscribed swelling on the left side of the neck, just below the angle of the jaw, which was supposed by his attending physician to be caused by a syphilitic tumour. Three days ago this rounded projection subsided, and at the same time the whole anterior portion of the neck became greatly enlarged, the skin covering it was evidently tightly stretched, and it was almost impossible to swallow even a little liquid.

Under the opinion that these symptoms were caused by the pressure of matter poured out from an encysted collection that had burst open, an incision was made through the skin and fascia, in the position chosen for ligation of the carotid artery. This gave outlet to a large quantity of a purulent liquid, less creamy and more gelatinous in appearance than ordinary pus. The difficulty of swallowing was at once relieved.

The case, in some respects, resembles those described by Dupuytren under the name of *phlegmon large du cou*, where an inflammatory abscess is seated deeply behind the sterno-mastoid muscles and cervical aponeurosis, and extends easily towards the head, and above all towards the chest.

REVIEWS.

ART. XVI.—*The Medical and Surgical History of the War of the Rebellion* (1861–65). Prepared in accordance with Acts of Congress, under the direction of Surgeon-General JOSEPH K. BARNES, United States Army. [Part I. Volume I., Medical History. By J. J. WOODWARD, Assistant Surgeon, U. S. A.] Royal quarto, pp. xliii. 726.

Appendix to Part I., containing reports of the Medical Directors, and other Documents. Edited under the direction of Surgeon-General JOSEPH K. BARNES, U.S.A., by Assistant Surgeon J. J. WOODWARD, U.S.A., and Assistant Surgeon GEORGE A. OTIS, U.S.A. Royal quarto, pp. 365. Washington: Government Printing Office, 1870.

THIS volume of 1100 pages is the first of three, or more, to embrace the medical portion of this history. This instalment is itself divided into two parts and an appendix. The parts present the statistics of disease and death, respectively, among the white and the coloured troops. The appendix, occupying nearly one-third of the volume, is made up of reports and statements from medical officers, in field and hospital, to their superiors. The paper and type are good, and the printing but little disfigured by typographical errors.

The portion of this grand work, now before us, is the fruit of a Congressional appropriation made in June, 1868.

From the preface to the entire work, written by General Barnes, it appears that Dr. Hammond, then Surgeon-General, began as early as May, 1862, to institute measures to secure more detailed and accurate reports of sickness and injuries. Almost at the same time he announced the intention of the Bureau to collect and arrange materials for a Medical and Surgical History of the Rebellion. With an energy and a breadth of view in his department, comparable to that of Mr. Stanton in the War Office, Dr. Hammond laboured most successfully not only to promote the health and comfort of our troops in the field, camp, march, and hospital, but also to garner up the precious lessons which should utilize for the healing of posterity the heroic suffering and devotion of their fathers. We regret that Dr. Barnes gives but half a dozen lines to the services of his predecessor.

In carrying out and extending these designs and improvements, Dr. Barnes seems to have laboured with zeal and intelligence. Improved blanks were devised, surgeons were stimulated to observe carefully, and record faithfully, and their attention from time to time directed to matters of importance which might not otherwise have been uniformly observed. In a circular issued to all army surgeons, they were requested to notice in their reports the following points: "The *morale* and sanitary condition of the troops; condition and amount of medical and hospital supplies, tents and ambulances, etc.; the points at or near the field where the wounded were attended to; degree of exposure of wounded to wet, cold, or heat; adequacy of supplies of water, food, stimulants, etc.; mode of removal of wounded from field to field-hospitals; to what general hospitals

the wounded were transferred; by what means, and where; the character and duration of the action, nature of wounds received, etc." Without careful and earnest attention to, and record of, these and such conditions, on the part of all surgeons, "the vast experience of the past," says Gen. Barnes, in an order of November 23, 1861, "will remain with individuals and be lost to the service and to the country." In each army the Medical Director was instructed to appoint proper subordinates to collect, prepare, and send to Washington all statistical and other facts useful for the contemplated Medical and Surgical History of the War. Early in 1864, special blanks were issued for the separate record of secondary hemorrhage, tetanus, and pyæmia.

The machinery of the Medical Bureau of the War Office naturally underwent the same progressive change as occurred in all departments of the government. Juster and ever growing appreciation of the greatness of the struggle, and experience of the working of methods, led to frequent changes in the forms by which facts were recorded. It would be unreasonable to expect in the earlier records of the war, the exactness and excellence of arrangement which only experience makes possible.

The collection of material for a grand pathological and surgical museum, from field and hospital, was, if we remember rightly, originally suggested by Dr. Hammond, and was carried on with more or less persistency and zeal. About two years before the close of the war we find a general order aiming to facilitate the preservation of specimens, and their transportation from distant posts to Washington. Surgeons were requested to label and properly wrap, or preserve in kegs of spirit, the specimens in the rough, to be forwarded when enough were collected, with descriptive lists, to the curators of the museum. Certain kinds of specimens are named as particularly desired. In this memorandum are included: excised portions of bone; exfoliations, especially from stumps; examples of changes occurring in stumps, such as occluded arteries, bulbous nerve ends, rounded bones, etc.; wounds of entrance and of exit, in integument, by different shaped balls; wounded nerves, vessels and viscera; photographic views of perishable specimens and remarkable cases; plaster casts; models of ingenious or especially useful apparatus, etc.

From this and similar orders, vivified by the general zealous coöperation of army surgeons, by the hearty encouragement of Mr. Stanton, and rendered fruitful by the skill and devotion of Drs. Woodward and Brinton in charge of the museum, has resulted a collection of incalculable value. To this, however, the volume before us refers only incidentally, and we mention it to show the scope of the grand plan of which both are parts.

For convenience, and to illustrate the influence of climate upon health, the country occupied by our armies is here divided into three great regions, Atlantic, Central and Pacific. The Central embraces the area between the Rocky and the Appalachian chains, including the shores of the Gulf. The extent of the other regions is obvious. These again are subdivided into districts bearing the names of the different military departments. The subdivisions, of course, do not precisely coincide with the military localities of the same name, since the latter sometimes change by division, extension, or consolidation. The preëminent importance, however, of keeping together the statistics of the principal armies, led the compiler to adhere to the departmental names, with explanatory notes whenever their geographical extent was essentially changed.

In the tables for each department we have a list of diseases and causes of

death, amounting, at different times, to from one hundred and thirty to one hundred and seventy particulars. These are arranged in five classes, zymotic, constitutional, parasitic, local, and wounds, accidents, and injuries. Most of these classes are divided into orders: thus the zymotic embraces three, miasmatic, enthetic, and dietetic; and these three orders include thirty odd particulars. The local class contains nine orders, among which are found disorders of nerves, circulation, respiration, and digestion; covering some eighty or ninety particulars. The constitutional has two orders, diathetic and tubercular. Dr. Woodward explains that the classification employed is founded on that of Dr. Farr, originally prepared as a report to the Congress of European Statisticians which met at Paris in 1855, and discussed there and at subsequent meetings at Brussels and Vienna. Though not adopted by the Congress, it has since been employed in the reports of the Registrar General of England, and in those of the British army, as well as in many other recent statistical reports. Having been thus widely used, convenience of comparison more than intrinsic merit dictated its employment here. Some change was, of course, necessary to adapt to the recording of disorders in adult males, a classification designed for both sexes and all ages. After the close of the first year of the war, moreover, experience led to some changes in the orders, and a considerable variation in the particulars under some of these.

The first tables exhibit the sickness and death of troops in the two regions then occupied, Atlantic and Central, during May and June, 1861. The third is a consolidation of the former. Cases are enumerated in one column and deaths in another, upon a horizontal line with each disease-title; the mean strength of the army for each month is placed at the head of the monthly columns.

It is at first a little startling, to read that in May, 1861, out of a mean strength of 16,161 there were reported 5130 cases of illness, including 26 gunshot wounds, with only 19 deaths. In the same Atlantic region in May, 1864, when some of the heaviest fighting and most terrible exposure of the whole war occurred, out of a mean strength of 216,639 there were but 60,000 cases and 1600 deaths, while 25,000 of the cases were gunshot wounds. To 1217 cases of acute, and 61 of chronic diarrhœa, with 104 of acute dysentery, and 423 of other digestive derangements, we find, in the period first named, not one death! Out of 79 cases of "inflammation of the lungs" we find but two deaths. In June the facts are much the same; doubtless haste and inexperience, with sudden change of habits, caused much slight illness; while all serious cases were allowed to depart for their homes, and were thenceforth lost to the army records. Many other considerations bearing on the facts will readily suggest themselves to the reader. It is to be remembered, also, that these first months had no deaths from cases of previous months, while some portion of *their* cases doubtless proved fatal subsequently.

For the next year, June 30, 1861, to June 30, 1862, the tables exhibit the facts for separate departments of each region and for each month. The statistics of the Atlantic region include seven departmental tables, with a special table to show *cases originating in*, and deaths occurring in, the general hospitals of the region. Then follows a consolidated table to exhibit the totals; here we still find reported a very light mortality in comparison to the cases; but the proportion of cases for the month of May is much less, and that of deaths to cases, even excluding those from wounds, very much greater than for the previous May.

The statistics of the Central region, for this year are in like manner exhibited, in six departmental tables, one hospital, and one consolidated table. Those of the Pacific region require but three tables, and each with limited numbers.

Table xxiv. exhibits, opposite each disease-title, and under each month with its mean strength, the cases and deaths, so far as reported, in the entire armies of the United States for the year ending June 30, 1862. Glancing along the line assigned to typhoid fever, and allowing for the varying mean strength of the army, we find the cases increasing rapidly from 1 in 550 in July, up to 1 in 100 in November; then diminishing slightly in December; a little more rapidly in January; more decidedly in February and March when they amount to 1 in 260; after which they increase nearly two-fold in April, to which point, after a further rise in May, they do not quite fall in June. Thus, the cases seem nearly four times as numerous in the last as in the first month of the year; the mortality is about one-fourth for the year. It would obviously be unsafe to draw hasty inferences from these figures as to the prevalence of typhoid at different seasons. It might happen, for instance, that in a month usually free from this disease, large bodies of troops might happen to be collected under circumstances peculiarly favourable to its development; or conversely, in the season when it would be looked for, the sanitary condition and surroundings of the larger armies might chance to be unusually wholesome. We do not say this to depreciate the value of tables, but to illustrate the need of more than a superficial view of them in order to draw correct inferences. In this particular instance, however, we ought to mention, what we shall subsequently find stated by several army surgeons, in the appendix to this volume, that there is reason to believe that considerable difference of opinion and practice existed as to the diagnosis and differentiation of this fever from typho-malarial and even from remittent.

At the end of the regular sequence of tables for the year 1863-64, a special table is presented to exhibit the medical history of the "march to the sea." Although the cases herein contained had been already classified under their proper departmental heads, it was very wise to present them in this shape, owing to the great historic importance of the expedition and its thoroughly exceptional character. With a mean strength of 142,000, the two months' campaign presents 62,871 cases, including 14,000 of gunshot wounds, and a total of 548 deaths, of which 426 were from wounds. During those same months, in the entire army of 630,000, there were over 300,000 cases with 10,000 deaths, and 60,000 wounded gave 4600 deaths. Of course, there were no immense general hospitals to swell the deaths of the great march; confidence in their leader, and a consciousness that they were achieving a wonderful exploit, had undoubtedly some influence in preserving the health of the men.

Although the war ended before June 30, 1865, the tables are continued during the succeeding year.

Table C [one hundred] shows the cases and deaths, due to each cause, in the entire body of white troops, during each year. The mean strength in field and garrison united, and mean number in general hospitals, are placed at the head of each yearly column. In the grand total for the five years we notice reported 75,000 cases of typhoid, with 27,000 deaths; 50,000 typho-malarial, with 4059 deaths; 286,490 remittent, with 3853 deaths; acute and chronic diarrhoea and dysentery, 1,500,000, with 38,000 deaths; inflammation of the lungs 61,202, with 14,738 deaths. It is

creditable to our medical and administrative officers that but about 31,000 cases of scurvy with 400 deaths are reported in the whole five years, with a mean strength of half a million.

The amount of yellow fever, 1181 cases with 409 deaths, seems wonderfully small when we consider the number of troops at different times stationed at posts where it is either a frequent or an occasional visitor.

The mortality assigned to measles, 4246 in 67,763 cases, does not represent fully the results of the disease, which was often followed by fatal lung trouble. Diphtheria—not in the lists of the first fourteen months—out of 7277 cases shows a mortality of 716. Over a quarter-million cases of rheumatism present a mortality of 475. "Consumption," 13,500 cases, gives 5286 deaths. Tape-worm is reported in 548 cases, with one death. Epilepsy is credited with 9029 cases and 332 deaths. Aneurism presents 249 cases and 58 deaths. Some 7000 cases of different forms of heart disease exhibit 1238 deaths. We may briefly enumerate the following causes of illness and death: asthma, 9000, and 75; bronchitis, acute and chronic, 200,000, and 1179; inflammation of the pleura, 32,000, and 600; hernia, 24,353, and 39, of which cases we believe a very large proportion existed prior to enlistment and should have prevented it.

Gunshot wounds exhibit a total of 230,018, with 32,907 deaths; of course there are included in this designation only the cases that lived long enough to be picked up and cared for. About 43,000 cases are reported of punctured, lacerated, and incised wounds, with 870 deaths. Only 301 suicides occurred; and of executions, 104.

The next table exhibits the discharges of white troops on Surgeon's certificate of disability. Some of the causes of discharge are as follows: diarrhœa, 16,000; debility, 14,000; rheumatism, 12,000; consumption, 20,000; epilepsy, 3872; paralysis, 2838; eye-diseases, 4000; deafness, 1157; heart-disease, 10,636; hernia, 9000; gunshot wounds, 33,458; amputation, 5832; wounds unspecified, 4878; old age, 2600; under age, 425; stammering, 20.

The following three tables exhibit the facts concerning coloured troops during the year ending June 30, 1864, in the Atlantic and the Central regions, and both combined. By the latter we notice that typhoid fever was about three times as common as among the white troops in the same year, with a proportionate mortality slightly larger; and typho-malarial was still more largely prevalent, with a death-rate of one in five, against one in ten among white cases. Remittent, with little excess in cases, appears three times as fatal among the blacks. Intermittents, generally a little more common among the blacks. These also suffered more from rheumatism. Scurvy was about six times as common, and more fatal. Bronchitis, nearly in the same excess, and still more largely fatal. Pneumonia, just about the same proportionate excess, but with a mortality not excessive. Diarrhœa and dysentery were somewhat more prevalent and very much more fatal. Measles about four times as common, and more deadly. Scarlatina is not credited with one case among the coloured soldiers.

These facts as to malarial diseases seem quite contrary to common opinion before the war. It may indeed be that the apparent excess of these complaints among the blacks is, in part, owing to the fact that they were largely employed at the most malarious posts on account of their supposed immunity. But allowing all weight possible to this consideration we are forced to conclude that the African race has not

the endurance of the whites under the labours and exposures of camp and field.

We have chosen the tables of one year by which to compare the statistics of the two races; rather than the tables of totals, because the latter do not correspond in extent of time, being five years for the white and three for the coloured soldiers.

Passing over the remaining tables, as similar in structure and significance to those noticed, we come to the appendix. Here are printed, with many neat maps, such portions of reports and statements made to the central medical authorities as seemed of permanent value.

The first report, by Medical Director King and some of his subordinates, relates the sad story of the first Bull Run battle. Exhaustion of the men, by forced marching and running, by order of excited and imprudent officers, under a burning sun, is believed by Dr. King to have been an important agent in deciding the battle.

The evils consequent upon the haste with which the first troops were sent into the field, are illustrated in all the earlier reports. They are quite fully and graphically set forth by Medical Director Tripler, in his report upon the first year of the war. Even at the best, these reports are sad reading. The enormous extent of country covered by army movements, often sparsely settled and unproductive; the frightful roads, and deep rivers to be bridged or passed in boats; the terrible swamps where movements were inconceivably laborious, and where malaria destroyed the weak and sapped the vitality of the strong—these and many other circumstances, rendered great suffering inevitable. When in addition to these, however, we read of incompetency, and ignorance, and negligence, the picture takes a still darker hue. The fruits of appointing men to military command, and in some cases to medical positions, for political reasons, are but too visible throughout these pages. In the early months of the struggle, a certain amount of suffering from the necessary inexperience of men and officers of all kinds could not be avoided. But there seems to have been a melancholy lack of central, organizing force, to arrange, regulate and control. Duties and privileges of medical officers were undefined, unknown, and often much misconceived by themselves and by others. If, for instance, a surgeon had the intelligence to perceive causes of disease, and a sense of duty powerful enough to attempt their removal by measures which the commanding officer alone could order, he was but too liable to see his counsels despised, and himself snubbed. And so, such removal of camp, or more careful police, or different diet, or personal cleanliness, or change of routine, as might have saved the men from morbid agencies, or better enabled them to resist them—all these were neglected by some conceited commander; and the faithful surgeon could only fight at fearful odds the foe which he would have kept out of the camp altogether.

Dr. Tripler urges very strongly the necessity of giving to medical officers such rank and position in the army as should give to their counsels greater weight of authority.

The enlisted men furnished fully as striking proofs of culpable mismanagement in raising regiments as did the officers. The aged, the feeble, the epileptic, the ruptured, broken-down vagrants and callow youths—through the criminal carelessness or even connivance of sworn examiners, were received in large numbers. We wish it could be said that such misconduct was confined to the first year of the war. In fact, the fraud and infamy continued and even grew. Once in the field, this unfit class of re-

cruits melted away like dew before the sun. The treasury was robbed, the hospitals filled, the heart of the nation sickened by defeat where victory should have been certain, and thousands upon thousands of good men continued to be sacrificed on the altar of political and private vain-glory and avarice.

It is remarked by many surgeons that much illness in the first months of the war was caused by the total, and very natural, ignorance of both officers and men in the volunteer regiments, concerning all the little matters which make camp-life comfortable and healthful. To cookery, washing of clothing, and police duty, they were wholly unaccustomed; these were distasteful to them, and consequently were too apt to be badly done.

In reading the clear and modest narrative, by Medical Director Tripler, of the McClellan Peninsular Campaign, we realize, as never before, the difficulties and discouragements under which was performed the medical superintendence of that army. That it was so well done, seems little short of marvellous, in the light of this and accompanying reports.

Up to the battle of Antietam great embarrassment resulted from the frequent loss of all medical supplies, in retreating. At that time a change was made, whereby such supplies were issued in much smaller quantities so as to be much more portable; and arrangements were made for frequent and easy replenishment. The removal and care of the wounded, too, seems to have become more systematic and efficient.

At the Gettysburg battles, judging from the report of Medical Director Letterman, the appliances for succouring the wounded were remarkably effective.

The ambulance system cannot be said to have reached its highest excellence until the enactment of the "Ambulance Law" in March, 1864. Experience, and the views of the leading surgeons, all favour the plan of having a regularly organized and permanent corps of able-bodied men properly drilled and disciplined, with stretchers and ambulance wagons, whose sole and exclusive duty is the removal of the wounded from the front during action, and their transportation to such points as are desired. Not only are the wounded thus best cared for, but an immense amount of skulking during action is prevented.

As a reminder of the terrible Virginia campaign in the spring of 1864, we will mention a letter of Medical Director McParlin, dated June 5, and addressed to Gen. Grant. In it is mentioned the fact that the army had been marching and fighting thirty-two consecutive days, drinking swamp water, surrounded by animal and vegetable putrefaction—thousands of men, horses, and mules lying dead on the surface of the ground—deprived of vegetable food, seriously affected with diarrhoea, and threatened with scurvy. This appeal was followed by a week of comparative rest, during which every effort was made to improve the surroundings and the diet of the troops; and with perceptible good effect.

We have glanced over scores of reports relating to the later events of the war, as viewed by medical men in the Potomac and other Virginia armies; and also several concerning the coast-wise expeditions sent to points on the Carolina shores. To cull every interesting statement would much exceed our aim and limits. One thing is conclusively proved by the medical history of these expeditions which is directly contrary to general belief before the war. Here we have seen northern white men, not only living but performing almost herculean labours, under the greatest possible exposure, amid the most pestilent swamps of the South Atlantic coast,

with a rate of sickness and death not greater than in many other campaigns.

Reports from surgeons in western armies contain narrations of intense interest, connected with the principal great battles of Missouri, Tennessee, and upper Georgia. The amount of illness caused by exposure during the siege of Fort Donelson, and the subsequent operations along the banks of the Tennessee, seems to have been almost appalling. The terrible battle of Shiloh, we are told, found the medical officers very ill-furnished with needful supplies. Energetic measures taken by Drs. Simons and McDougall, procured an abundant supply of medical stores in time for the succeeding great battle at Corinth.

It is an ungracious task to criticize the writings of brave and faithful men regarding matters that occurred when they were too busy saving life and relieving suffering, to find time for much literary labour. Still, it seems to us that there is a singular lack of plainly stated practical deductions from individual experience and observation. The events of battles and campaigns are graphically described. The hurry and terrible earnestness of field and hospital labour after a conflict, are brought vividly before us. The terrible scenes attendant on defeat, abandonment of the wounded to die on the field, or to receive tardy succour with deprivation of the facilities for proper care, are portrayed in all their horror. In many instances, the varied influences upon health, of diet, water, marching, shelter and climate, are instructively displayed. But comparatively few of these writers seem to impart to us what they themselves learned by their noble and arduous services.

Lest, however, we should seem to do injustice to our professional brethren, we will note a few points from a report by Dr. H. S. Hewitt, Medical Director of the Army of the Ohio. He remarks on the immense injury done by officers in disregarding the natural powers and state of health of their men. A single forced march, imprudently ordered, will knock up scores out of a regiment. Inattention on the part of regimental and company officers, to the personal cleanliness and habits of their soldiers, is equally disastrous. Especially harmful is it for the private to be allowed to eat his meat raw, or badly cooked. A close personal interest in, and supervision of all such, and other matters affecting the daily comfort of the soldier, should be considered not only a moral but a military duty on the commander's part. Such care and thoughtfulness will always meet, not one, but many, rich rewards. Each company should have a skilful cook, by whom not only would the health and comfort of the men be incalculably benefited, but the cost of wages saved through greater economy by the use of the allowed rations. Dr. Hewitt urges with great force the importance of instituting at West Point a professorship of military hygiene, in order that future officers may know something about the preservation of health, and be at least qualified to appreciate the suggestions which may be made by their surgeons. The use of pine boughs for bedding, and even for hospital huts, was found both comfortable and wholesome. Not only Dr. Hewitt, but many other surgeons, remark upon the existence at times in our armies of a sort of scorbutic cachexia, very seriously and extensively impairing the health and powers of resistance, while yet there were few or no open cases of the disease itself. Dr. Hewitt had the fortune to observe several cases of the disturbance caused by the explosion of shells, near, but not striking, the head. The symptoms were of a very serious character, uniting the traits of cerebral concussion with those of

severe shock. In the treatment of chronic diarrhœa, Dr. H. relied greatly upon small doses of Fowler's solution with opium, together with extensive application of tinct. iodine over the abdomen and along the spinal column. As an application for the relief of painful wounds, he speaks in the very highest terms of sulphate of morphia applied dry directly to the raw surface. Especially happy were the results of this treatment in wounds of the chest and abdomen. In discussing some of the vexed questions as to treatment of gunshot fractures of femur, he points out that the only possible condition of saving a comminuted thigh, is perfect rest; unless that can be secured it is folly to attempt to save the limb. Alarming secondary hemorrhage he has often perfectly controlled by the actual cautery.

Several other writers mention the great diversity of opinion about the fevers encountered in the army. Typhoid, and typho-malarial, are names which different surgeons would apply often to the same case. True typhus was recorded so seldom as not practically to assume any importance. During the first year a heading "continued fever" was employed; and this seems then to have received the cases afterwards assigned to typho-malarial, which title did not at first exist in the disease-lists. It seems probable that remittent was sometimes confounded with the other fevers; but it was only between the two first-named that serious confusion obtained. Some surgeons, whose opinions seem of more than average weight, believe true typhoid to have been much less common than is generally supposed.

Many writers in this appendix advert to the marked influence of defeat or victory in determining the recovery or death of the sick and wounded.

Considerable testimony is borne to the prophylactic virtue, in malarious districts, of quinia and whiskey given together. Strange to say, one surgeon refers to the difficulty of getting the men to take the medicine. One sensible surgeon largely diminished the prevalence of malarious affections in his camp by inducing the commander to refrain from turning out the men at an unseasonably early hour—to wait hours for breakfast—and by procuring the issue of hot coffee immediately after roll-call.

Referring to the feeling of northern physicians that quinia was used in needlessly large doses, it is claimed that much larger amounts were necessary in the South than at the North. One surgeon, advocating the use of mercurials with quinia, in commencing treatment, states his belief that the army ration is too rich in carbonaceous material for use in a southern climate; and that by its continued use the liver is overburdened and congested.

We have been struck in glancing over these hundreds of reports by army surgeons, with the almost total silence concerning the Sanitary Commission. Only one mention of the existence of such an organization do we remember to have met. If this body did anything to relieve the sick and wounded and to preserve the health of the well, its services should have been frankly acknowledged in these reports, and such acknowledgments printed in this work. If it did no good, or harm rather than good, that fact should have been stated. The people of this land freely gave millions of money and incalculable labour, under the belief that they were aiding the noblest charity and discharging the most sacred duty. Such silence in a work intended to stand as a monument and memorial to all time, can scarcely be excused. We hope the omission will be in some measure supplied in later volumes.

B. L. R.

ART. XVII.—*The Medical and Surgical History of the War of the Rebellion.* (1861–65.) Prepared in accordance with Acts of Congress, under the direction of Surgeon-General JOSEPH K. BARNES, United States Army. [Part I., Volume II., Surgical History. By GEORGE A. OTIS, Assistant Surgeon, United States Army.] Royal quarto, pp. clvi., 650, xiv. Washington: Government Printing Office, 1870.

THIS magnificent volume, though bearing the date of three years since, contains, especially in its later portions, a great deal of information belonging to a more recent period; so that it might fairly have borne on its title-page the date of the present year, without its writer incurring any risk either of his work being thought antiquated, or of himself not being considered fully informed as to the surgical questions of the day. After a few pages of prefatory matter, signed by Surgeon General Barnes, Dr. Otis takes up the pen and presents himself to us as the author—or, as he modestly prefers to call himself, the reporter or compiler—of the more than eight hundred large and closely printed pages which constitute the bulk of the volume. To these pages criticism (in the ordinary sense of the word) is hardly applicable—for who can criticize facts?—and it is with facts that Dr. Otis mainly deals; he has, indeed, added comments and deduced conclusions, which approve him both the learned scholar and the judicious, practical surgeon, but his comments are so just and reasonable, and his deductions so fully sustained by the facts from which they flow, that the doubter can but give assent, and the critic waive cavil and join in hearty admiration of the great work accomplished. Hence, in the space allotted to this review, we shall confine ourselves principally to analysis and quotation, aiming to give those of our readers who may not be so fortunate as to have access to the book itself, a fair notion of the immense amount of labour which Dr. Otis has gone through, and of the rich gain to surgical science, which has been thus, through his instrumentality, acquired.

In his introduction Dr. Otis refers to the plan on which it was at first intended that the Medical and Surgical History of the War should be written, and gives the reasons which forced the abandonment of the original design, and led to the adoption of the system which has been actually pursued in the preparation of the present volume; he also gives copies of the various forms of blank return which were furnished to medical officers in the field and in hospitals, in order to secure full and accurate accounts of cases; describes the system of recording employed in the medical department of the Confederate Army—judicious use has been made of such Confederate records as came into the possession of the government during the war or at its termination—and adds that frequent reference has been made to the published reports of the various modern European wars which have occurred before or since our own.

In arranging the material with which he has had to deal, Dr. Otis has proceeded from particulars to generals, beginning with an account of special wounds and injuries, and reserving, for another volume, remarks upon the relative frequency of wounds according to regions, and upon the influence of climate and other hygienic conditions on the results of wounds, with such other general observations as may arise from a consideration of the whole subject. In the present volume is given a chro-

nological summary of the very numerous battles and minor engagements which took place during the four years, from April, 1861, to April, 1865, with the number of killed, wounded, and missing on either side, and the surgical history proper is then begun and continued through five chapters, the first being devoted to wounds and injuries of the head, the second to those of the face, the third to those of the neck, the fourth to those in which injury of the spine was the most prominent lesion, and the fifth to wounds and other injuries of the chest. The various operations which have been resorted to are considered in connection with the injuries of the several regions of the body, a plan which, as the author justly remarks, though more difficult than a distinct classification, offers many advantages in the avoidance of repetitions, and in enabling the writer to present each subject as a whole. In the second volume, which, we are glad to learn, is nearly ready for the press, Dr. Otis will take up the study of the wounds and injuries of the abdomen, pelvis, and genito-urinary organs, and of the upper and lower extremities, with the subjects of amputation and excision; and in the third volume, the consideration of gunshot wounds in general, their graver complications, pyæmia, gangrene, tetanus, and secondary hemorrhage, together with those subjects, not less important to military surgeons if less interesting to their brethren in civil life, the "materia chirurgica," and the transportation and field supplies of the wounded. Some idea of the extent of material with which the author has had to deal, may be obtained from the table on page xxv of the Introduction, from which it appears that, excluding all casualties which terminated fatally on the battle-field, the cases of injury recorded in the Union army from May, 1861, to June, 1865, numbered 408,072, and that 37,531 of these cases ended in death. Referring to the classification adopted in recording the clinical histories of this multitude of cases, Dr. Otis says:—

"It was simply a nomenclature for a series of blank books, in which surgical facts derived from a variety of sources might be entered for facility of reference, and has been modified as frequently as convenience dictated. It has been found to answer the purpose for which it was intended reasonably well."

In a foot-note consideration is given to Prof. Longmore's criticisms upon this classification (See *Medico-Chirurgical Transactions*, vol. liv. pp. 219 *et seq.*, and *No. of this Journal* for July, 1872, p. 199), and, after showing the gross inaccuracy of Prof. L.'s Arabian-Nights'-Entertainment-like account of the enormous clerical force supposed to be employed in our American Surgeon-General's office,¹ Dr. Otis adds:—

"I will not complain of the unfairness of contrasting the results of the preliminary report in *Circular* No. 6, with the perfected histories of Dr. Matthew and M. Chenu; but I do complain of an 'American system' being described and unfavourably contrasted with the classification of Inspector-General Taylor, when, as I have shown, there was no complete series of surgical reports in the army of the United States, and information was, of necessity, to be derived from heterogeneous data. 'The surgeons in the field on the American system . . . make no distinction between the various kinds of cranial fractures . . . where all such injuries are tabulated together, as they are in the primary American returns, what useful information can be obtained from a table showing, for example, the results of the operation of

¹ Prof. Longmore has evidently been victimized by one of those "perfectly reliable gentlemen" who were in the habit of supplying the American public with startling military news during the late war.

trephining?" ([Longmore, *loc. cit.*] p. 240.) I cordially concur in the warm praise accorded to the histories of the Crimean and Italian campaigns by M. Chenu. I will observe that in his latter work he very materially modifies the classification employed in the former. In the history of the surgery of the Italian war, he reports nine cases of trephining; in his Crimean history Dr. Matthew reports twenty-six cases. I shall record two hundred and twenty cases,¹ and shall be disappointed if their results afford no useful information. Dr. Taylor's classification may be excellent for the British army with its corps of trained medical officers; it could not have been advantageously introduced in our service, chiefly attended by surgeons hastily called from civil life. Dr. Longmore says (p. 235), that in Germany 'no fixed classification exists.' This is quite true, yet the statistical work of General-Artz Dr. Loeffler is a marvel of accuracy and completeness to those who occupy themselves with these studies; and the extended treatises of Drs. H. Fischer, Socin, and Klebs, following so soon upon the conclusion of the Franco-German war, are monuments of well-directed industry. I think that in war 'systems' must be made to conform to the exigencies of the occasion, and to national habits and organizations. There are certain great rules to which all nations will conform; the details must be adapted to varying circumstances. The British system may be best for Britain, but not necessarily for all other countries. On peut être plus sage qu'un gens, mais point que tous les gens."

Dr. Otis concludes his introduction by giving mournfully long lists of the casualties among medical officers during the war: beside all those who perished from disease or exposure, there were no less than nineteen surgeons of the Union army killed in action; thirteen were, while in the discharge of their duty, killed by partisan troops or assassinated by guerrillas or rioters; eight died of wounds received in action; nine died from accidents met with in the line of duty; and seventy-three were more or less severely though not fatally wounded in battle.

Turning now to the surgical history itself, we begin our examination of Chapter I., which treats of "WOUNDS AND INJURIES OF THE HEAD," and which, though occupying no less than 320 pages, is even yet not complete, many of the general observations, and notably the discussion as to the applicability of the trephine in military surgery, being reserved for a subsequent volume. Injuries of the head are classified by Dr. Otis in three categories, the *first* embracing incised and punctured wounds, such as sabre-cuts, bayonet-stabs, and sword-thrusts; the *second*, injuries from falls, blows from blunt weapons, and the results of various accidents; and the *third*, gunshot wounds.

Incised and Punctured Wounds.—Brief abstracts are given of the histories of 282 cases of *incised wound of the scalp*, only six cases having terminated fatally, and the injuries received having been the direct cause of death in only three instances. The treatment employed seems to have corresponded pretty closely with that resorted to by civil surgeons, the parts adjoining the wound having been denuded of hair, and the edges then approximated, after the removal of foreign bodies, with strips of adhesive plaster. Sutures were employed in a few instances without ill result, but, as justly remarked by Dr. Otis, though probably less dangerous than has been commonly supposed, they are rarely indispensable. In no case were ligatures employed, compression having been invariably found adequate to control hemorrhage. With regard to the constitutional and hygienic treatment of scalp wounds, Dr. Otis draws a judicious distinction between the depletory and spoliative measures recommended by our ancestors (which he properly repudiates), and the rational and conservative

¹ Actually, 229 cases.—REVIEWER.

plan of enforcing rest and quietness, and of withholding unsuitable articles of food and drink.

Forty-nine cases are recorded, in which the *skull* was fractured by a sabre or other cutting weapon :—

“ They furnish illustrations of all the varieties of such injuries : the superficial marking of the outer table, the division of the outer table and diploe, the section of both tables and more or less profound penetration of the cranial cavity, and the separation of an osseous flap.”

Of the forty-nine cases, thirteen proved fatal, death resulting in ten instances from intracranial inflammation or compression, in one from epilepsy, in one from tetanus, and in one from pyæmia. Removal of fragments was effected in eleven cases, of which only one resulted disastrously—thus confirming the observation long since made by Grima, that the greatest comminution of the skull is often attended with the least injury of the brain. The prognosis in cases of incised fracture appears to vary in a marked manner with the particular part of the skull affected : the statistics here collected corroborate the doctrine of Hennen and Boyer, that sabre-wounds of the top of the head are much less dangerous than those of its lateral portions. Dr. Otis appends to this section a learned and most interesting discussion (which want of space alone prevents our quoting at length) as to the proper treatment to be pursued when parts of the skull are sliced away, and the detached fragments adhere to flaps of integument which have not been completely separated from the rest of the scalp. Authorities seem to be nearly equally divided upon this question, but from a careful examination of the recorded facts, and from mature consideration of the whole subject, Dr. Otis concludes that, although the dangers likely to result, from allowing the flap of bone which adheres to the scalp to remain, have probably been exaggerated, yet that it is, upon the whole, safer to remove the osseous fragment, if it can be readily detached. All portions of the scalp itself should of course be preserved, as its vitality is great and reunion will often occur under what are apparently the most unfavourable circumstances.

The consideration of this part of the subject is concluded by giving a brief record of twenty-eight cases of *incised scalp wound* (one fatal) produced by various weapons other than those legitimately used in warfare.

Punctured wounds of the head are represented by eighteen cases of *punctured scalp wound*, of which two terminated in death, and by six cases of *punctured fracture of the cranium*, of which all but one ended fatally, the survivor in the one favourable case being moreover permanently disabled. These facts aptly illustrate the maxim that in cases of punctured fracture of the skull, the diagnosis is difficult, the prognosis gloomy, and the treatment unsatisfactory. With regard to the latter, Dr. Otis judiciously advises that operative interference should not be resorted to until it is certain that the brain or its membranes are actually implicated.

Miscellaneous Injuries.—In this section are considered those injuries of the head which are met with in military as in civil life, but which are not inflicted by weapons of warfare. A large number of cases are reported of contusion or laceration of the scalp, fracture of the skull, concussion of the brain, etc., produced by railway accidents, by falls, by blows, by kicks from horses, and by other similar causes. Five hundred and eight cases, in all, are recorded in this section ; in 331 the soft parts alone were injured, and all of these terminated in recovery ; in 72 the brain was injured though the skull was not broken, death ensuing in 14 of these cases, and

53 patients being discharged for disability ; while in 105 cases the skull was fractured, and in 57 of these death resulted. The trephine was employed in 18 cases, but in 10 of these unsuccessfully.

The treatment employed in scalp injuries appears to have been generally judicious, though in a few instances effusions of blood were prematurely cut into, with the natural effect of inducing undue inflammation and unhealthy suppuration.

"Concussion of the brain" was observed in a number of instances, and in fourteen cases which terminated in death was the alleged cause of the fatal issue ; but none of these cases, says Dr. Otis, "throw any light upon the functional or textural alterations of the brain resulting from this shock, but leave the subject, which has perplexed pathologists for so many centuries, as inscrutable as ever." We must add that none of these cases tend to shake the belief which we have long entertained, that there is no definite pathological condition to which the term "concussion" can with any propriety be applied, and that the term itself should be abandoned except as indicating the cause of what have been described by Hewett and others as "concussion lesions." The total number of cases recorded during the war as concussion of the brain from causes other than gunshot, appears from a table given on page 66 to have been 922, of which number 215 cases terminated fatally.

Of the 105 cases of fractured skull recorded in this section, 46 are known to have been examples of simple, and 43 of compound, fracture. Of the whole number 19 recovered completely, 29 recovered partially, and 57 died ; the causes of death were, compression by bone fragments and intracranial hemorrhage, each in 16 cases, encephalitis in 10, abscess of the brain in 6, cerebral laceration in 5, shock and "concussion" in 2, and epilepsy and "hernia cerebri" each in 1. The mortality of fractures at the base of the skull was almost double that of fractures of the vault. There were no instances of fracture limited to the internal table, and but two or three of fracture confined to the external table of the skull. Watery discharges from the ear were observed in two cases. In three, fracture of the base of the skull was supposed to have been caused by *contre-coup*.

"In 79 cases of fracture of the skull treated without operative interference, the death-rate was 54.4 ; of 26 cases operated upon, the ultimate results are ascertained in 23, in which the mortality-rate was 60.8."

Gunshot Wounds.—The number of recorded cases of *gunshot wound of the scalp* is so large that Dr. Otis merely gives them in the form of a tabular statement, supplementing the table by brief details of the fatal and complicated cases. The total number is 7739, of which 162 are known to have terminated fatally. In 30 instances death appears to have resulted from encephalitis, although no primary lesion of the skull was observed by the surgeons by whom the patients were treated. The occurrence of erysipelas was noted in only 22 cases, of which 8 proved fatal through the supervention of meningeal inflammation. Gangrene was observed in but 9 cases, of which 4 ended fatally. Primary hemorrhage was very rarely a serious complication, but secondary hemorrhage was more common ; 21 cases in all are recorded, of which 2 proved fatal, and in 8 of which it was necessary to resort to ligation of the bleeding vessel. Tetanus was the cause of death in five cases, and in one instance was supposed to have been cured by the inhalation of chloroform ; but, as Dr. Otis justly remarks, in this case "the evidence is anything but satisfactory." Pyæmia was observed in five cases (all fatal), and in twelve cases death was attributed to "typhoid

fever," a term which Dr. Otis tells us "was often employed in a very loose sense by some of the medical officers [it is, we may add, similarly employed by too many civil surgeons], being applied not infrequently to a state of exhaustion resulting from irritation or traumatic fever." Malarial fever is given as the cause of death in four cases, and pneumonia in thirteen; but Dr. Otis suspects, with great reason, that in some at least of the cases in each category a pyæmic condition was the real cause of the fatal issue. The remaining causes of death were various intercurrent affections, such as smallpox, diarrhœa, diphtheria, etc. The treatment adopted by our surgeons in cases of gunshot scalp wound seems to have been usually simple and judicious, though in some few instances sutures were employed, with what possible object can only be conjectured.

Gunshot contusion of the skull was observed in 328 patients, of whom 55 died, 100 were returned to duty, and 173 were discharged from service; of the latter, 75 may fairly be added to the list of those who recovered. Complications were observed in a number of cases; thus hemorrhage occurred in five instances (two primary, three secondary), in one of which ligation was found necessary, erysipelas in ten cases (one fatal), gangrene in two, and deep burrowing of pus in six cases. Periostitis, following contusion of the cranial bones, occasionally gave rise to caries, and not seldom to necrosis, leading to the exfoliation of more or less considerable portions of the skull in thirty-seven cases, of which five proved fatal. Localized and persistent pain was observed in ten cases, but in none of these was it thought right to resort to operative interference. Dr. Otis has carefully examined more than forty skulls contused by gunshot projectiles, without finding a single example of that local hyperostosis which has been described as a frequent result of this form of violence; in two instances there was abnormal thickening, but in these cases the patients died so soon after the reception of their wounds as to make it probable that the morbid condition was antecedent to, rather than caused by, the injury. The Army Medical Museum, however, contains three specimens of chronic thickening of the cranium resulting from contusions produced by falls or blows.

The causes of death in the fifty-five fatal cases of gunshot contusion, were external hemorrhage in two, tetanus, pyæmia, typhoid fever, and dysentery, each in one; cerebral compression from intracranial hemorrhage or suppuration in seventeen; and meningitis or other secondary lesions of the encephalon in thirty-two. Among the patients who survived, various nervous affections were observed, such as vertigo, epilepsy, paralysis, aphasia, and impairment of the special senses or mental faculties.

"Of sixteen cases of operative interference, four only had a favourable termination, and these were examples of the secondary removal of exfoliated fragments, Art serving as the handmaid of Nature, who had already nearly effected a cure. In the twelve remaining fatal cases, in which formal trephining was resorted to, pus was found between the skull and dura mater in four instances, beneath the dura mater in one case, and in the substance of the brain in one. In two instances it is alleged that intracranial extravasation was observed; in another that arachnitis was present; in three cases the causes of the symptoms of compression were not specified. . . . The patients survived the operations on an average about three days."

Gunshot fracture of the external table of the skull, without injury to the internal table, has been reported as having occurred in a number of cases; but, excepting fractures of the outer wall of the frontal sinus, or of the mastoid and zygomatic processes of the temporal bone, and instances of grooving of the outer table of the cranial vault by fragments of shell, there

are no specimens in the Army Medical Museum which furnish satisfactory examples of this form of injury. The whole number of cases of fracture of the external table reported is 138, and 12 of these proved fatal, though in only 10 instances was death attributable to the injury received. After a careful examination of the facts in each case, Dr. Otis is disinclined to admit that (with such exceptions as have already been indicated) "the outer table of the skull is ever fractured in the adult without injury to the inner table, either by projectiles of war or any other external violence." We are disposed to think that the addition of the last five words makes this rule too absolute, and indeed we observe that, in a previous part of the volume, Dr. Otis has himself admitted as genuine, reported cases of fracture of the external table of the parietal bone, the result of blows from sabres.

Twenty cases are recorded of *gunshot fracture of the internal table of the skull* without fracture or depression of the outer table. Of these, all but one (Dr. Bellows's case) proved fatal, the diagnosis in that instance having been verified by the exfoliation of a sequestrum involving the whole thickness of the skull, and showing that, while the external table had escaped injury, the internal was the seat of a depressed fracture. Dr. Otis introduces in this section a most learned and interesting disquisition, in which he reviews in an exhaustive manner the literature of this rare form of injury, and ably discusses the mechanism of its production, giving due credit to Teevan, of London, for having by experimental inquiry first demonstrated the true mode in which this form of fracture occurs. The diagnosis of fracture of the inner table of the skull must always be difficult during the life of the patient, though Stromeyer, following Lanfrancus, Paré, La Motte, and Atthalen, believes that the lesion may sometimes be recognized by percussion, the resonance at the seat of fracture being of elevated pitch and somewhat resembling the "cracked-pot sound" observed in certain affections of the chest. This difficulty of diagnosis Stromeyer considers "lucky for the patient, because thereby he escapes the danger of being trepanned." Dr. Otis, on the other hand, thinks the use of the trephine "undeniably justifiable" in the event of the persistence of urgent symptoms of compression, and particularly if there is paralysis of the side opposite to that of the injury. It is to be remembered, however, that while, as Dr. Otis justly remarks, "it cannot be doubted that many cases of this form of injury terminate favourably and are never recognized," eight out of twelve (misprinted in the text as eleven) cases here reported or referred to, in which trephining was practised, proved fatal, while the only patient who is positively known to have recovered from this injury during our war was not trephined. Hence, in view of the difficulty of diagnosis, and of the impossibility in most instances of determining to what condition the symptoms of compression and paralysis are actually due, the number of cases in which operative interference would be justifiable must, it seems to us, be extremely limited.

So many cases of *gunshot fracture of both tables of the skull* were reported during the war, that Dr. Otis has found it practicable to give abstracts of only the more interesting examples of each variety, with brief notes of others, and tabular statements of the whole number recorded. Of *linear or capillary fissure* there were reported nineteen cases, of which twelve ended favourably, while seven terminated in death. Dr. Otis, however, has not been able to satisfy himself of the correctness of the diagnosis in any of these cases, and suspects that in each there was more or less

injury of the cranial contents, with depression of the inner table, a condition which was actually found to exist in those of the fatal cases in which autopsies were made. In many instances both tables of the skull were broken *without there being any depression of fragments*; in some cases, by the oblique impact of balls or pieces of shell, considerable portions of bone were detached; in other cases bits of lead were clipped off from glancing balls and embedded; while in other cases, again, larger portions, or even entire balls, lodged in the diploe, or in the frontal or mastoid sinuses.

Gunshot depressed fractures of the skull were very numerous, and presented examples of every variety of the injury which has been described by military surgeons. Thus there were fissures of the external with extensive splintering of the internal table, punctured fractures, depressed fractures with long fissures radiating in various directions, etc. In many cases balls were split upon the cranial bones, the missiles sometimes remaining astride of a sharp edge of bone, and at other times separating into halves, one of which penetrated the cranium while the other flew off or perhaps lodged beneath the integument or aponeuroses. Caries or necrosis, exfoliation of sequestra, paralysis, epilepsy, loss of sight, of hearing, or of taste, and various other nervous affections, were among the sequelæ observed in these cases.

Penetrating gunshot fractures of the skull were of frequent occurrence. In many instances balls lodged within the cranial cavity, and in a number of cases attempts at extraction were made, usually without avail, but occasionally with gratifying success. *Perforating gunshot fractures of the skull* were also often observed, and in fourteen cases the patients survived, though totally and permanently disabled. *Crash or smash* is the expressive title given by Dr. Otis to those cases of depressed fracture of the skull which were produced by the impact of cannon balls, or by the explosion of large shells, and which were commonly attended with great comminution and disjunction of the sutures, invariably proving fatal, if not immediately, at least within a very few days. Not many cases of this nature are related, as from their speedy termination they present comparatively few points of surgical interest.

Numerous cases are recorded in which, without formally resorting to the operation of trephining, *fragments of bone were removed* after gunshot fracture of the skull. In a good many instances more or less complete recovery was thus secured, but in other cases the patients, though surviving, became epileptic or insane, or suffered from various nervous affections, such as partial paralysis, headache, want of co-ordinating power over the muscles, or impairment of one or more of the special senses. Erysipelas (as in all cases of head injury during the war) was comparatively seldom met with, as were gangrene and pyæmia, though each of the latter led to a fatal result in several instances. Beside the causes of death just mentioned the chief sources of mortality in the fatal cases were intracranial or external hemorrhage, meningitis, cerebritis, and intracranial suppuration.

The question of the value of *trephining*, in cases of gunshot injury of the head, is justly considered by Dr. Otis so important, that he has taken pains to record all the facts relating to the subject that have been reported, and to detail all the accounts of formal operations of the kind performed during the war, which he has been able to collect. Beside the cases which have already been considered (of trephining for contusion of the skull,

etc.), there are here given 95 cases of trephining for gunshot fracture, which proved fatal; 24 which resulted in recovery with various degrees of disability; 15 in which the patients recovered sufficiently to resume their military duties; 4 in which the patients were placed on modified duty in the Veteran Reserve Corps; 6 in which the patients were exchanged, paroled, or furloughed, and 36 cases in which the patients were discharged from service. As we have already mentioned, Dr. Otis has not yet published his own conclusions as to the applicability of the trephine in military surgery, and comments on the facts which he has detailed would therefore be at the present time premature.

Hernia cerebri was reported as existing in a number of cases, of which 51 are here given in detail; but 8 of the 44 which proved fatal are considered by Dr. Otis to have been simply examples of primary protrusion of brain matter from extensive gunshot fractures, and only 36 to have been illustrations of what is properly described as fungus or hernia cerebri. In 4 of the 51 cases trephining was resorted to, and projectiles were extracted in an equal number; in 25 cases, without formal trephining, fragments of bone were removed. From page 318 we learn that the whole number of cases of hernia cerebri was 61, of which only 11 terminated in recovery.

Fracture by contre-coup is the subject of several interesting paragraphs in which Dr. Otis analyzes the various cases occurring during the war, which were supposed to be examples of this kind of injury. This portion of the volume possesses a melancholy interest for all citizens of the United States, for in the case given on page 305, every reader will at once recognize that of our murdered President, the lamented Lincoln. We would direct Dr. Otis's attention to what is obviously a misprint in the account of the symptoms: "Over the *left* eyelid," it is said, "there was slight ecchymosis. The pupil of *that* eye was slightly dilated, the *left* pupil was contracted; both were irresponsive to light." The importance of this case from a historical point of view is so great, that we hope the ambiguity in the sentences quoted will be removed by a note in the next volume of the history. The most remarkable pathological feature of President Lincoln's case was the fact that both orbital plates of the frontal bone were fractured, the fragments being pushed *upwards* towards the brain, while the ball, which had entered through the occipital bone, was found lodged in the brain above but not in contact with the broken orbital plates. The latter were regarded as having been fractured by *contre-coup*, but Dr. Otis, adopting the suggestion of Prof. Longmore, considers it a more plausible explanation, that the force of the ball's impulse was transmitted directly through the cerebral mass itself, and accounts for the peculiar displacement of the orbital plates by supposing that they were pushed upwards by the pressure of the blood extravasated within the orbits. With due diffidence we must confess that we are not satisfied as to the correctness of this theory, and venture to express the opinion that the true explanation of the lesion in question is somewhat different. With regard to the subject of *contre-coup*, it has always seemed to us that a great deal of unnecessary confusion is created by the want of agreement among surgical writers, as to precisely what is to be understood by the term; if the word is to be used in its most limited sense, as applying solely to an isolated fracture, caused by violence applied to a part diametrically opposite to the point of injury, probably the orbital fracture in President's Lincoln's case may not, as Prof. Longmore remarks, be regarded as a fracture by counter-stroke; but, on the other hand, if the

word is to be used in a broader sense,¹ as applying to an isolated² fracture caused by transmitted or indirect violence, the lesion being at a distance from the point at which the injury is received, then President Lincoln's case affords as fair an example of fracture by *contre-coup* as can be asked for.

The true explanation of this case is, we believe, to be found in a study of the considerations advanced by Saucerote, Sabourant, Chopart, and Delpech, in their writings on the subject of *contre-coup*, which considerations, though not in fashion with modern pathologists, have always seemed to us eminently reasonable. The theory which was propounded by the writers referred to, is, as is well known, that the skull (like any other spherical or ellipsoidal hollow body) undergoes, when struck, certain changes in shape, the diameter corresponding to the point of impact being first shortened while the transverse diameter is lengthened, and being subsequently lengthened while the transverse diameter is shortened, these alternate oscillations in form continuing until the force of the blow has been exhausted, when the parts return to a state of rest. Now, the first effect of a ball striking the occipital bone (as in President Lincoln's case) would be, according to this theory, to shorten the antero-posterior diameter of the skull, and lengthen the lateral diameters, drawing all parts in front (including the orbital plates) *inwards toward the brain*, and pressing the lateral portions outward. But bearing in mind that in cases of fracture by transmitted violence the weakest parts always give way—the orbital plates in this instance were, according to Dr. Otis, "unusually thin"—and bearing in mind Teevan's rule, that fracture invariably begins in the line of extension, what should we expect but that the weakest parts (the unusually thin orbital plates) should yield, and that they should yield in the line of extension, viz., inwards toward the brain; and this is precisely what was found in President Lincoln's case after death. This explanation (which is merely an application of the old doctrine of *contre-coup*), seems to us, upon the whole, more satisfactory than Dr. Otis's theory of displacement by the pressure of blood extravasated within the orbits. As to the fracturing impulse being transmitted through the cerebral pulp, we confess that it seems to us much more probable that the force should pass around through the walls of the skull itself; the brain mass, measurably approximating in structure to a fluid, would, we should suppose, tend to diffuse force equally in all directions, rather than to transmit it with such concentration as to lead to the occurrence of fracture.

Dr. Otis quotes from Prof. Longmore an account of a somewhat similar case, in which a gunshot fracture of the left *parietal* bone was accompanied by fracture of the left orbital plate, and, we may add, gives on page 49 another analogous instance, in which an isolated fracture of the right orbital plate accompanied fractures of the right *temporal*, *sphenoid*, and *frontal* bones, not due, however, to gunshot injury.

The chapter on head injuries is terminated by a *summary* which includes

¹ This is the sense in which the term was used by Grima, Saucerote, Sabourant, Chopart, David (writing under the name of Bazille), and others of the older writers. (See *Mém. sur les sujets proposées pour les prix de l'Académie Royale de Chirurgie*, t. iv., and David's essay, also translated in *Justamond's Surgical Tracts*, London, 1789, pp. 241-313.)

² We say an *isolated* fracture, because the ordinary fractures of the base of the skull have been shown by Aran and Hewett to be invariably accompanied by fissures reaching into the vault, and, therefore (as justly remarked by Saucerote), rather prolonged fractures than fractures by *contre-coup*.

three tables giving (1) the results of 4350 gunshot injuries of the cranium reported during the war of the Rebellion, (2) the nature and results of 12,980 injuries of the head from all causes as reported during the war, and (3) the results of 911 cases of injury of the skull in which operations were performed. We transcribe the latter table for the benefit of our readers.

Operations.	Cases.	Recoveries.	Deaths.	Undetermined.	Ratio of mortality.	Remarks.
Extraction of missiles	175	89	83	3	48.3	The missiles extracted from beneath the scalp or soft parts are not reckoned in this table.
Ligations	33	21	12	...	36.3	
Removal of bone splinters or elevation of depressed bone .	454	275	176	3	39.0	
Formal trepanning ¹	220	95	124	1	56.6	
Operations for hernia cerebri .	29	7	22	...	75.8	

Of 2911 cases of fracture of the skull without known depression, 1085 terminated in recovery, operations of one kind or another having been performed in 262 instances, and non-operative treatment having been employed in the remaining 823. From the reports of the pension office, the subsequent condition of a number of the survivors has been ascertained, and, as might be expected, in many instances the pensioners suffer from persistent headache, vertigo, or other nervous manifestations.

As may be seen from the preceding table, *ligations of arteries* were practised in 33 cases of injury of the skull. The *common carotid* was tied in seven instances, four times on the left side (with one death), and three times on the right side, all of these cases proving fatal. The same vessel was tied 54 times in cases of face wound, and 23 times in cases of wound of the neck or spine, giving a total of 84 examples of this operation, with 63 deaths, or a mortality of 75 (misprinted as 76.8) per cent. The other instances of ligation in cases of head injury, which call for notice, are one of the *external carotid* (unsuccessful), and twenty-two of the *superficial temporal*, of which five proved fatal—two of the latter from hemorrhage.

In 186 cases, *balls penetrated the cranial cavity*; in 85 instances the foreign body was removed, with 43 recoveries and 42 deaths, while in 101 cases the foreign body was not removed, only 42 of these ending in recovery, while 59 proved fatal. These figures, however, must not be taken to justify reckless hunting after balls lodged in the brain; for it is quite possible that some cases which ended in death after unsuccessful efforts had been made to extract the foreign body, might have terminated differently had no interference whatever been attempted; we believe that Brodie's rule upon this subject is a sound one, that it is better even to allow a foreign body to remain, than to increase the irritation of the brain by injudicious efforts at removal.

Beside the 220 cases of *trephining* included in the table which we have quoted, Dr. Otis has collected, since that table was printed, nine others, of which six ended in recovery and two in death, the ultimate result of one not having been ascertained; the death-rate of terminated cases is thus reduced to 55.5 per cent. The dates of operation are known in 162 cases of trephining for the results of gunshot injury; 46 were cases of primary operation,

¹ Nine additional cases are afterwards reported.—REVIEWER.

with 32 deaths (69.6 per cent.), 99 of intermediary operation, with 56 deaths (56.6 per cent.), and 17 of secondary operation, with 4 deaths (23.5 per cent.). It thus appears that in trephining, unlike amputation and excision, the chances of recovery are better (other things being equal) the longer the operation is postponed; a strong argument, it seems to us, against the use of the trephine as a prophylactic against complications which may perhaps never arise. Dr. Otis corrects, in a foot-note, a statement which was made in the well-known Circular No. 6, to the effect that

"‘Surgeon D. W. Bliss, U. S. V., alone has reported eleven successes after the use of the elevator, or trephine.’ It is true," adds Dr. Otis, "that Dr. Bliss has reported eleven cases, but I find on examining them that his success, though gratifying, was not uniform. Doubtless his success was overestimated, as, subsequently, in regard to the efficacy of *cundurango* in cancer, from reporting cases before the cures were confirmed. He had eleven cases of trephining, with six recoveries, . . . besides four cases of removal of fragments, . . . or fifteen cases, with eight recoveries."

In thus terminating our examination of Chapter I., we feel that we in no degree overestimate its value when we pronounce it the most valuable single contribution which has ever been made to the subject of Injuries of the Head.

Chapter II. is devoted to a consideration of "WOUNDS AND INJURIES OF THE FACE," and, like its predecessor, is divided into three sections, treating respectively of (1) incised, punctured, lacerated, and miscellaneous wounds; (2) gunshot wounds; and (3) plastic operations for deformities resulting from wounds and injuries of the face.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Several hundred cases are grouped under this heading, but only a few are considered of sufficient interest to be separately recorded. The most serious cases belonging to this class were those of burn or scald, which are, however, reserved for future consideration. *Sword wounds* of the face were met with in 37 cases; 28 patients returned to duty, three were discharged, one was exchanged, one deserted, one died, and three are not accounted for. *Bayonet wounds* were observed in 27 instances; 11 patients returned to duty, 11 were discharged, one died, and four are not accounted for. *Fractures of the bones of the face* were observed in 64 cases, of which three proved fatal, as did likewise three out of 271 cases of wounds or contusions of various kinds which are classed together as *miscellaneous injuries*.

Gunshot Wounds.—Gunshot injuries of the face, though of a serious nature on account of the great deformity to which they often give rise, are not attended with a very high rate of mortality. Dr. Otis has classified the cases recorded during the war, according to the part affected, and considers first *gunshot wounds of the orbital region*. In 63 cases the sight of both eyes was destroyed by gunshot injury, and 17 of these cases terminated fatally; in 825 cases the sight of one eye was destroyed, and in 47 of these death resulted from implication of the brain or large vessels. In 91 instances in which one eye was destroyed, the sight of the remaining became sympathetically affected. The total number of cases of gunshot wound of the eye recorded (excluding cases of powder burn, etc.), was 1190, of which 64 terminated in death; 379 patients recovered sufficiently to return to duty, and 679 were discharged, while the ultimate result in the remaining 68 cases has not been ascertained.

"The percentage of recovery, where a single eye was torn from its socket by a bullet, was large, and the secondary lesions of the brain or of the opposite

eye were less frequent, after this rude mode of extirpation, than in cases in which buckshot or small pistol-balls lodged within the globe."

As may be supposed, the eyelids rarely escaped injury when the eye was wounded, and entropion or ectropion, anchyloblepharon, and symblepharon, were frequent sequelæ in this class of cases. The eye was seldom destroyed without the orbital walls being injured, but unless the fractures in such cases extended to the cranial cavity, the results were seldom fatal.

"There was no carefully reported case of amaurosis induced by the division of the supra-orbital nerve by balls, and nothing in the reports to sanction the assertion of Mackenzie that the 'wind of a ball has been known to produce amaurosis.' The 'wind of balls,'" pointedly adds Dr. Otis, "has long been wafted out of the domain of military surgery."

Traumatic cataract not unfrequently followed gunshot contusion of the eye.

From a general survey of all the cases reported during the war, Dr. Otis justly concludes that, whenever foreign bodies are lodged in the globe of the eye, they should be extracted at all hazards, and that, if extraction cannot be accomplished, the globe itself should be extirpated in order to preserve the other eye. When panophthalmitis follows a gunshot injury, a free transverse incision should be made to evacuate the contents of the eyeball.

This section is terminated with abstracts of 138 cases of *gunshot fracture of the facial bones*, 57 of these cases having terminated fatally. Secondary hemorrhage supervened in 76 instances, and the common carotid artery was tied 13 times with five recoveries.

Plastic Operations.—In this section are given the histories of thirty cases in which plastic operations of greater or less magnitude were performed by Drs. J. C. McKee, U. S. A.; Buck, Sands, and Gouley, of New York; Keen, Judson, and Grove, of this city; the late G. C. Blackman, of Cincinnati; Culbertson, of Zanesville, Ohio; the late C. B. Gibson, of Richmond, Va., and other surgeons. Many of these cases are of much intrinsic interest, and all are deserving of study by those who pay special attention to plastic surgery; but the space already occupied by this review and the amount of material yet to be considered, warn us to pass on to other subjects.

This chapter concludes with a *summary*, giving tables of (1) 3312 cases of gunshot fracture of the facial bones,¹ of which 340 proved fatal; (2) 4914 cases of gunshot wound of the face, without known fracture, of which only 58 proved fatal; (3) 9815 cases of injury of the face from all causes, of which 470 proved fatal; and (4) 671 cases in which operations were performed, of which 80 proved fatal.

Wounds of the ear were seldom of sufficient importance to be regarded as worthy of detailed record; in seven instances the auricle was completely carried away by large projectiles, and in two cases great mutilation was produced by musket-balls, but in none of the nine cases does there appear to have been any impairment of the power of hearing. *Wounds of the nose* were of importance, chiefly from the disfiguring deformity to which they were apt to give rise—the contraction of the nostrils and depression of the nasal bridge, bearing sometimes, as pointed out by Dr. Otis, an unpleasant resemblance to the results of constitutional syphilis. In addition to the cases of eye injury previously reported, Dr. O. gives on page 386 a

¹ The lower jaw was involved in more than one-half, and the upper jaw in nearly one-fourth of the whole number of cases.

curious case of *bayonet wound of the eye* which came under his own observation. *Wounds of the cheek* usually healed without difficulty except when the parotid duct was involved, in which case a salivary fistula often persisted and required operative interference. Local palsies, neuralgias, or spasmodic twitchings, often followed injuries of the portio dura, or of the branches of the fifth nerve. With regard to the attempt to procure primary union in cases of gunshot wound of the face, by paring the edges of the wound and bringing the parts together with sutures, as advised by Larrey (a plan which was favourably reported on by Chisolm and Michel, of the Confederate army), Dr. Otis declares that the evidence adduced to prove the efficacy of the method is inconclusive, and agrees with Légouest that such a proceeding, while unnecessary in the slighter cases, is attended with positive disadvantages in those which are of a graver character.

Wounds of the upper jaw were usually found to be serious injuries, those patients who escaped the risks of hemorrhage being often called upon to experience such complications as erysipelas or pyæmia, or suffering impaired health from prolonged suppuration and the unavoidable swallowing of decomposed secretions. Here, as elsewhere in the volume before us, Dr. Otis inveighs strongly (but, in our judgment, none too strongly) against the use, in the treatment of hemorrhage, of those abominable preparations known as Monsel's salt and Monsel's solution. Had Dr. Hammond included these vile compounds among the articles prohibited in his famous calomel and tartar-emetic order, he would, we doubt not, have saved many lives, and would thereby have deserved well of posterity.

Wounds of the lower jaw were met with three times as often as those of the upper maxilla, the mortality rate being about the same (8.3-8.1) in both cases. Very varied modes of treatment were employed, but, upon the whole, none seem to have been more satisfactory than the use of a simple pasteboard splint with oakum pad and bandage.

As already indicated, *hemorrhage*, and particularly secondary bleeding, was a common and very grave complication of wounds of the face; the whole number of cases in which the common carotid artery was tied for hemorrhage under these circumstances, was, as already mentioned, 54, and in 38 of these death is known to have resulted. In one case (of fractured lower jaw), the internal jugular vein was accidentally wounded in extracting a ball which had lodged in the neck, but, double ligatures being promptly applied, the patient recovered without any evil consequences ensuing.

In several cases considerable portions of the upper or lower jaw were successfully excised, and in a few instances it was thought advisable to resort to the operation of staphyloraphy.

Chapter III. is devoted to the study of "WOUNDS AND INJURIES OF THE NECK," of which about 5000 cases were reported during the war, exclusive of cases complicated by lesions of the face, chest, cervical spine, or great vessels—which are considered elsewhere. The chapter is divided into three sections, (1) on miscellaneous injuries, (2) on gunshot wounds, and (3) on operations.

Incised and Punctured Wounds and Miscellaneous Injuries.—In this section several instances of sabre or bayonet wound are recorded, with two remarkable cases, one of cut-throat and one of fracture of the hyoid bone; the latter possesses a certain historical interest as that of the infamous jailor Wirz. The case of cut-throat was one involving the larynx and

œsophagus, and was chiefly remarkable on account of the means adopted by the patient (who obstinately refused nourishment) to assuage his thirst:—

“From a pail of water, placed above the level of his head, he could suck through a rubber tube, by bending forward and closing the wound, a little water that was apparently swallowed; then using the tube as a syphon, he would let the water pass through the pharynx and escape through the wound. He required eight pailfuls, or twenty gallons, of water daily.”

Gunshot Wounds.—This section embraces many cases of great interest; in 136 instances, *missiles lodged* in the neck, extraction being effected in 87 cases, while in others the foreign bodies became encysted, or, more rarely, gravitated through the surrounding tissues, and thus made their way into the nearest cavity, or were spontaneously eliminated from the exterior surface. Dr. Otis narrates a curious case which came under his own observation, in which an inch and a quarter grapeshot, fired from a battery about three hundred yards distant, struck the hyoid bone, and being deflected from its course buried itself in the muscle of the right scapular region, whence it was removed; the patient did well for four days, and then died rather suddenly from œdema of the glottis.

Torticollis was observed in a large number of cases, as the result of wound of the sterno-cleido-mastoid muscle, and, as shown by the reports of pension surgeons, has been often very persistent. Stromeyer's opinion is, however, quoted, to the effect that, when the muscles alone are involved, complete recovery may ultimately be expected.

Wounds of the larynx or trachea were observed in more than 80 cases, and in many instances were followed by loss of voice, exfoliation of cartilage, and the persistence of aërial fistulæ. An interesting case is given from the records of the Confederate army, which shows that the zeal without knowledge of volunteer assistants produced as baleful effects among the Southern wounded as among our own. The victim in this instance was a corporal of a Virginia regiment, who was shot through the trachea at Spottsylvania on May 10, 1864. He was received into a Richmond hospital, and was rapidly improving, when, on the tenth day—

“Some intermeddling woman going through the hospital, thinking she would benefit the patient by renewing the dressing, and without consulting the surgeon in charge of the ward, removed the dressing, and plugged the wound with cotton saturated with turpentine. The patient, not being able to speak, was compelled to submit to this cruel treatment, which caused his death . . . before the woman who did the mischief left his bedside.”

Wounds limited to the *pharynx or œsophagus* were not very common, though these organs were implicated in many cases which proved immediately fatal from concomitant injuries of the great vessels or nerves of the neck.

Among the secondary consequences and complications of gunshot wounds of the neck, the most important were paralysis, hemorrhage, erysipelas, gangrene, and pyæmia.

Operations on the neck.—A tabular statement of the more important operations performed for gunshot wounds or other surgical affections of the neck, shows that there were 29 ligations of vessels with 22 deaths, 14 tracheotomies with 8 deaths, 6 laryngotomies with 5 deaths, 2 excisions of tonsils with no deaths, and 87 extractions of balls with 12 deaths. *Tracheotomy* was performed six times for gunshot wound, with four deaths and two recoveries. The same operation was performed twice, and *laryngotomy* four times, for œdema of the glottis, but only one of the six cases proved

successful. Three operations were performed for diphtheria, one (laryngotomy) terminating in recovery, but both the others (tracheotomy) proving fatal. Tracheotomy was performed twice, successfully, for simple laryngitis, and twice—once successfully and once without success—for apnoea resulting from quinsy, as was laryngotomy once, likewise without success. *Ligation of the common carotid artery* was performed 21 times, but only once successfully, and ligation of the third part of the *subclavian* once, with a fatal result; reference is made (page 422) to a successful ligation of the *internal jugular vein*, but the history of the case seems to have been by some oversight misplaced, and one of another character substituted. Dr. Otis, in connection with this subject, speaks with deserved praise of Dr. S. W. Gross's excellent papers on wounds of the internal jugular vein, published in the numbers of this Journal for January and April, 1867; Dr. O.'s own remarks upon this subject are reserved for a separate chapter on Venous and Arterial Hemorrhages. With regard to ligation of the carotid in cases of gunshot wound of the face or neck, Dr. Otis, after pointing out that the mortality of terminated cases during the war was 78 per cent., adds:—

"The exhibit is yet more deplorable than that of the preliminary report in *Circular 6*, S. G. O. 1865, which gave for forty-nine cases a fatality of 75 per cent., and will furnish M. Léon Lefort . . . an additional argument against the performance of this operation for traumatic causes, unless the injury involve the main trunk itself, and a ligature can be placed above and below the point of injury. Nowhere else, not even in wounds of the forearm or legs in which the brachial or femoral have been tied, does the operation of Anel appear to greater disadvantage. Tying the common trunk for injuries of the smaller vessels of the head or neck is an operation based on a fallacious interpretation of the anatomical and physiological relations of the region. Nothing that is not corroborative of Guthrie's admirable suggestions is found in the preceding cases. If the indolent or timid surgeon, who, to control bleeding from minor branches of the carotid, prefers to stuff the wound with styptics, or to perform the easy operation of tying the common trunk, rather than to seek in the difficult anatomy of the maxillary and thyroid regions, to place double ligatures at the bleeding point, he may temporize, or may associate his name with the necrology of ligations; but if his patient recover, it will generally be found to be under circumstances in which the surgeon's operative intervention was uncalled for."

This chapter is terminated with an account of two cases of gunshot wound of the neck, in which paralysis was relieved by the removal of balls—in one instance nearly a year, and in the other nearly seven years after the date at which the injury was received. The operator in the first case was Dr. R. Fraser Michel, and in the second Dr. N. S. Lincoln. Due praise is given here, as elsewhere in the volume, to the careful investigations of Drs. Mitchell, Morehouse, and Keen, upon the subject of nerve injuries.

In Chapter IV., Dr. Otis takes up the subject of "WOUNDS AND INJURIES OF THE SPINE." The total number of cases to be considered in this chapter is about six hundred, and in his classification of them Dr. Otis adopts his customary division of his subject into three sections.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Only two cases of *incised wound* are recorded, one terminating in recovery and the other proving fatal in the fifth week from exhaustion: a *post-mortem* examination in the latter case revealed a portion of the knife-blade which inflicted the injury, broken off and embedded in the neighbourhood of the fifth dorsal vertebra. *Contusions and miscellaneous injuries* are repre-

sented by seventy-nine cases, of which six proved fatal—one from chronic peritonitis, one from smallpox, and four from vertebral fracture or luxation.

Gunshot Wounds.—Cases of gunshot injury of the vertebral column are very frequently complicated with grave lesions of the abdomen, thorax, or great vessels of the neck, and hence, in most cases, prove almost immediately fatal, the number which actually comes under treatment being therefore comparatively limited. Dr. Otis gives in detail the histories of nearly a hundred of the more interesting cases, and then sums up the whole number reported in a tabular statement which we transcribe for our readers' benefit:—

Results of Six Hundred and Forty-two Cases of Gunshot Injuries of the Vertebræ.

REGION.	Cases.	Died.	Discharged.	Duty.	Unknown.	Percentage of mortality.
Cervical	91	63	19	8	1	70.0
Dorsal	137	87	32	18		63.5
Lumbar	149	66	51	28	4	45.5
Cervical and Dorsal .	2	1	1			50.
Dorsal and Lumbar .	3	3				100.
Vertebræ not stated .	260	129	72	50	9	51.4
Aggregate	642	349	175	104	14	55.5

For purpose of comparison with the results exhibited in the above table, we have recast into a similar form the tabular view of the results in 394 cases of spinal injury (derived almost exclusively from the records of civil surgery), taken from the monograph on Injuries of the Spine¹ which was published some years since by the present reviewer:—

Results of Three Hundred and Ninety-four² Cases of Spinal Injury.

REGION.	Cases.	Died.	Relieved or not improved.	Recovered.	Unknown.	Percentage of mortality.
Cervical	212	164	8	38	2	77.36
Dorsal	130	82	19	28	1	63.08
Lumbar	57	34	7	15	1	59.66
Not stated	19	5	6	8		26.32
Aggregate ²	418	285	40	89	4	68.18

In comparing these tables, it must be remembered that the latter includes a certain number of cases which proved instantly or almost immediately fatal, while the former embraces only such cases as survived long enough to have been actually placed under treatment. Some patients, also, who were discharged from service, might and in civil life no doubt would have been considered to have recovered, though not able to endure the hardships of a soldier's life. Making these allowances, it is interesting to observe how closely the results of spinal injuries in civil and in military

¹ Injuries of the Spine, Philadelphia, 1867, page 43.

² In this table, cases in which two regions of the spine were involved are noted under each region.

life correspond with each other, and, more especially, how uniformly the death-rate in both sets of cases varies with the particular part of the vertebral column which is affected.

The *symptoms* met with in cases of gunshot wound of the spine do not of course materially differ from those noticed in cases of spinal injury from other causes; we observe with interest that *tetanus* is said by Dr. Otis to have occurred as a complication of spine wounds in only seven instances during the war, a circumstance which confirms the opinion which we have elsewhere¹ expressed, that tetanus, if a nervous disease at all, is never primarily one of the central nervous system.

Operations.—Hemorrhage was not a frequent complication in cases of gunshot wound of the spine, during the war, and *arteries were ligated* in only four instances apart from one which has already been referred to in the chapter on Injuries of the Face. In two cases the common carotid artery was tied, in one the left subclavian (presumably for some lesion of the axillary vessels), and in one the occipital. All of the four cases terminated fatally. No instances of formal trephining of the spine were reported, but in 24 cases *fragments of vertebræ were removed*, either primarily, or as exfoliated sequestræ at a later period; ten of these cases terminated fatally, while in nine of those which ended in recovery, the spinous processes alone appear to have been injured. In 34 cases of gunshot injury of the spine *balls were extracted*, and 13 of these cases resulted unfavourably. Dr. Otis's remarks upon the operation of trephining or resection in cases of spinal injury, are very interesting and eminently judicious; he places Louis's famous operation where it properly belongs, among the extractions of loose fragments, and ends by justly declaring that

"Formal trephining of the spine has hitherto given such unfortunate results, that without much more positive favourable evidence, it cannot be accepted as an established operation."

Chapter V., and the last of the volume before us, deals with the important subject of "WOUNDS AND INJURIES OF THE CHEST," and, like the preceding chapters, embraces three sections, respectively devoted to (1) punctured and incised wounds and miscellaneous injuries—excluding simple fractures, etc., which are considered elsewhere, (2) gunshot wounds of the thorax and its contents, and (3) operations required by the effects of injuries in this region of the body.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Nearly 300 cases are recorded in this section, viz.: nine cases of sabre wound, with one death; 29 of bayonet wound, with nine deaths; 33 of incised and punctured wounds from various weapons, with 12 deaths; and 225 of contusion from railway accidents, falls, kicks from horses, etc., with five deaths.

Gunshot Wounds of the Chest.—This section deals with the records of many thousand cases, and many of the subjects discussed in it are of the highest interest and of the greatest practical importance.

Gunshot flesh wounds of the chest were, of course, very numerous; the results have been ascertained in nearly 11,000 cases, and in only 113 was there a fatal termination—the immediate cause of death in nearly half of these having been, moreover, in no way connected with the injury. Under the head of *non-penetrating injuries of bones* are described cases in which gunshot wounds were complicated with lesions of the osseous or

¹ Op. cit., page 35.

cartilaginous parietes of the chest, without the thoracic cavity itself having been opened, or its contained viscera directly implicated in the injury. Under this head are also given three cases of gunshot fracture of the scapula, in which the cavity of the chest was not primarily opened, but which ultimately proved fatal through the supervention of pleurisy or pneumonia.

Internal injuries without external wounds were met with in 25 recorded cases, of which 14 terminated in death. These figures probably do not represent the entire number of cases, for, as justly remarked by Dr. Otis:—

“The severe contusions by large spent shot, causing ruptures of the lung and heart, or laceration and great extravasation, are fatal on the field, and very rarely come under the surgeon’s observation, while the slight concussions of the chest cavity often pass unnoticed.”

The explanation given by M. Gosselin, of the mechanism of this rare form of injury, is, we believe with Dr. Otis, more satisfactory than any other which has been suggested.

Penetrating gunshot wounds of the chest were observed, during the war, in nearly 9000 cases, of which about five-eighths proved fatal. Several interesting cases of *penetrating and perforating wounds without fracture* are narrated, and Dr. Otis then considers in succession gunshot fractures of the *clavicle*, gunshot fractures of the *scapula*, gunshot penetrating fractures of the *sternum*, gunshot fractures of the *ribs*, *complicated gunshot wounds of the lung*, and gunshot wounds of *both lungs*. With regard to the reported cases of recovery after penetration of both lungs by gunshot missiles, Dr. Otis finds that in no instance is the evidence incontestable; there is no doubt that patients thus injured may survive several (in one instance nine) days, but that recovery ever follows under these circumstances is yet open to doubt.

Seventeen pages are devoted to a consideration of Dr. Benjamin Howard’s famous plan of “*hermetically sealing*” gunshot wounds of the chest, and all the evidence on the subject that has been obtained by the Surgeon-General’s office, is here fully set forth, Dr. Otis rightly considering that it is—

“Not a work of supererogation or an unnecessary occupation of space to show conclusively that what has been bruited abroad as the *American plan* of treating gunshot penetrating wounds of the chest, was fairly tested during the war, and its indiscriminate application found to be pernicious.”

We have not space to follow Dr. Otis in his demonstration of the true merits—or rather want of merit—of Dr. Howard’s much vaunted mode of treatment, but shall merely say that while 42 patients, whose wounds were “hermetically sealed,” perished, only 27 survived, and in only 20 of these was it specified that the lung was wounded. To be sure, as remarked by Dr. Otis, this rate of mortality (60.8 per cent.) would not seem excessive if the successful cases were all actually instances of penetrating chest wound.

“But,” adds Dr. Otis, “we fear that the statistical statement is open to many criticisms. Undoubtedly there are on the pension rolls the names of thirteen patients who recovered from alleged penetrating gunshot wounds of the chest under the treatment by hermetically sealing, and have survived their injuries from seven to nine years. Only one . . . enjoys good health . . . Two of the twelve other pensioners have necrosis and empyema, and interminably open sinuses; five suffer from hæmoptysis; two have partial paralysis;

the others suffer from chronic cough, solidification of portions of the lung, dyspnoea, and other evidences of damage to the respiratory apparatus . . . With all these disabilities they still live. Of five cases, reported as rapid recoveries (from lung wounds in each instance), there are no late histories . . . There remain, of the twenty-seven reported recoveries, nine cases, two of which . . . appear to be satisfactory, while seven are open to objection. . . . It is almost incredible that Dr. M. . . . should have sent Larkin to the ranks, knowing that he had been shot through the left lung one month before, no matter how complete his convalescence might appear; yet such is the record. Captain P. . . . was discharged, and may have had the unusual generosity to waive his claim for pension; but it is so extraordinary that the six enlisted men reported to have been shot through the chest should all have failed to make application for pension, that it is difficult to avoid the conviction that either the gravity of the injuries sustained by these men was, happily, greatly exaggerated originally, or else that the men imprudently returned to duty, were killed in action, or died in captivity. In the writer's judgment, only three of the series of twenty-seven cases . . . are authenticated as complete and permanent recoveries. . . . There is reason to believe that those signs which, when several coexist, afford a strong presumption of lesion of the lung, were wanting in many of the cases, and that the diagnoses given were unwarranted. There is no doubt that, in some of the cases, threatened asphyxia from hæmothorax or empyema made it impracticable to persevere in the occlusive treatment, and that the wounds were open during convalescence. The fatality of gunshot wounds really penetrating or perforating the lung is so great, that science would have been immeasurably indebted to Dr. Howard for an improvement upon ordinary methods of dealing with these serious injuries. It is obvious that such a pretension is far from having been established; it is probable that the routine application of the plan has not been unattended by disastrous results; and it is to be lamented that the numerous experiments have not even advanced our pathological knowledge."

Hernia of the lung was observed in seven cases during the war, and in three instances is believed to have ended fatally; ligation of the protruded pulmonary tissue was resorted to in two of the successful, and in one of the unsuccessful cases.

No complication of gunshot wounds of the chest is more common, nor is any more to be dreaded, than *hemorrhage*, and, accordingly, Dr. Otis's remarks upon this subject will be read with great interest by all practical surgeons. No examples were recorded during the war of gunshot wound of the *thoracic aorta*, and if any such occurred, the patients did not survive long enough to be placed under treatment. Since the war, however, Dr. Piper has reported a case of accidental pistol-shot perforation of the aortic arch, and Dr. Lidell has recorded a case of pistol-shot wound of the aorta just beyond the semilunar valves. Dr. White has also recorded a case of bayonet wound of the thoracic aorta, which proved quickly fatal from hemorrhage. Wounds of the *descending vena cava* were observed in a few instances, and two cases have been reported since the war, one the result of gunshot injury, and the other a case of arrow wound; in the latter case the victim, though scalped and otherwise injured, survived forty hours. Wounds of the *innominate* and *subclavian arteries* were observed in several cases:—

"It is quite time," says Dr. Otis, "that the dictum of Jourdan that surgery is powerless in lesions of arteries within the cranial, thoracic, and abdominal cavities should be expunged from the text-books. At least five cases occurred during the late war, of wounds of the subclavian in which surgical intervention was justifiable, and in one of these, the left subclavian was successfully tied by a Confederate surgeon, for a wound of the vessel where it passes across the first rib."

A few examples are recorded of wounds of the *internal mammary* and *intercostal arteries*; there was but one case (and that of doubtful authenticity) of *gunshot wound of the subclavian vein*, but there are specimens in the army medical museum of *rupture* and of *bayonet wound* of that vessel. *Traumatic aneurism* was but rarely met with as a sequence of gunshot wounds of the large vessels of the thorax.

Wounds of the pericardium and heart were observed in a number of cases, some of which proved instantly fatal, while in others the patients survived for a considerable period; among the reported cases of wounded pericardium, there were indeed several recoveries, but in these the diagnosis necessarily lacked the confirmation of an autopsy. This section is terminated with brief remarks upon *cardiac diseases resulting from wounds*, gunshot wounds of the *mediastinum*, wounds of the *thoracic duct*, wounds of the *oesophagus*, wounds of the *intrathoracic nerves*, and wounds of the *diaphragm*.

Operations on the Chest.—In this section are considered ligations of the arteries of the chest, excisions of portions of the bony parietes, extractions of splinters, missiles, etc., and instances of thoracentesis.

No case of *ligation of the innominate* occurred during the war, though this vessel was wounded in several instances. Dr. Otis suggests, on theoretical but we think perfectly tenable grounds, that the proper treatment for a wound of the distal portion of the brachio-cephalic trunk would be to tie this vessel itself in its middle portion, tying also the carotid and subclavian arteries, as near their points of origin as possible, and then to amputate at the shoulder.

Ligation of the subclavian was performed in 25 cases, 20 of which proved fatal; in two instances the vessel was secured in its *first* portion, and in two in its *second* portion, or between the scaleni muscles. In 16 cases the operation was performed for hemorrhage, and in nine cases for traumatic aneurism of the axillary artery. The *right* subclavian was tied in 13, and the *left* in 12 cases. One instance of subclavian ligation was recorded in the chapter on wounds of the neck, and 26 more will be given in a future volume in considering wounds of the upper extremity, so that the total number of cases reported during the war is 52, of which 41 (78.8 per cent.) terminated fatally.

The *internal mammary artery* was tied twice without success; the *suprascapular* artery once, with success; and the *intercostal* artery eight times, with two successes and six failures. Thirteen cases of ligation of the *axillary artery* (all fatal) are also recorded, and reference is made to other cases which will be detailed when Dr. Otis comes to speak of wounds of the arm.

Excision of the clavicle was performed in eleven cases, *complete* excision having been resorted to twice (with a fatal result), and *partial* excision nine times, with five deaths and four recoveries. Partial excision of the *scapula* appears to have been performed four times with but one death, and partial excision of one or more *ribs* in thirteen cases with four deaths. Operations on the *sternum* appear to have been limited to the removal of fragments, or of sequestra separated by exfoliation. The death-rate of gunshot fracture of the sternum seems not to be very high, for of fifty-one recorded cases, but eighteen (35.3 per cent.) terminated fatally.

Thoracentesis was performed in 28 cases with nine recoveries, or, deducting eight cases of effusion from idiopathic pleurisy, in 20 cases with only four recoveries, this large death-rate (80 per cent.) indicating that

the mortality of penetrating gunshot wounds of the chest is not materially affected by the operation. *Drainage tubes* were employed in some cases of empyema, and in others free *incisions* were made into the pleural cavity, while in some instances the evacuation of foreign bodies, etc., was facilitated by the use of mild detergent *injections*.

Balls or other foreign substances were extracted from the chest in 316 cases, of which 108 proved fatal. In 41 cases the projectile was lodged beneath the soft parts, without having injured the contents of the chest; of the remaining 275 cases, 108 terminated in death, while the result in nine is unknown—159, or more than half of the whole number, being reported as instances of recovery.

"As the names of the majority are found on the pension roll, there can be little doubt of the fact of recovery; but there is every reason to believe that the gravity of the injury was overestimated, and that many cases returned as penetrating wounds of the chest, in reality were wounds of the parietes only."

The last portion of the volume before us (but by no means the least in interest and importance) is devoted to a consideration of the *Mortality, Complications, Diagnosis, and Treatment* of wounds of the chest. The limited space remaining at our disposal compels us to hurry over this part of the book more rapidly than either its merits or our own inclination would direct, and we must content ourselves with referring to some of the more salient points which attract our attention as we turn over the pages.

Comparing the statistics of chest wounds derived from the records of our war with those derived from the records of various European wars before and since, Dr. Otis finds that it may be estimated with close approximation to accuracy, "that of those killed in battle, from one-third to one-half, and of those wounded in action, one-twelfth, receive wounds of the chest." The *mortality* of penetrating gunshot wounds of the chest, Dr. Otis finds to have been in the Union army, 62.4 per cent., which, as shown by a table on page 608, is slightly less than the average obtained by combining the statistics of various foreign wars. These figures show clearly of how grave a character these injuries really are, and it is probable that if those cases only were considered, in which the lung itself is known to have been wounded, the death-rate would be found to be still higher.

Emphysema seems to be a less frequent complication of penetrating chest wounds than it was formerly thought to be; at least it was noted in only 38 of nearly 9000 cases recorded in this chapter. *Traumatic pleurisy*, though regarded by Mr. Erichsen, and other systematic writers, as a necessary result of penetrating wounds of the chest, is found in practice to be really a somewhat infrequent complication; so *traumatic pneumonia*, though said by the English writer quoted, to be "an invariable sequence" of lung wound, and to have "frequently a tendency to extend to some distance around the part injured," is, in point of fact, comparatively seldom met with. Indeed there can be no doubt that Dr. Otis is quite right in declaring that—

"It is certain that pneumonia, in the ordinary acceptance of the term, is *not* an invariable sequence of wounds of the lung. It is probable that it is not a frequent sequence."

The fact is that *pneumonia* (as met with in idiopathic cases) is something more than mere *pulmonary inflammation*; and though pathologists who hold, as we do, that all repair after injury is effected by means of inflammatory changes, must consistently believe that lung wounds are fol-

lowed by *inflammation in the track of the wound*, yet it is quite certain that *pneumonia* (as the term is used by physicians) is, upon the whole, rather an unusual complication of lung injuries, and it is probable that its occurrence, when met with, is more owing to the constitutional condition of the patient, at the time of or subsequent to the reception of the wound, than to the wound itself.

Pneumothorax, *hydrothorax*, and *hæmothorax* are each made the subject of interesting remarks, by Dr. Otis, who shows, from an examination of all the evidence on the subject, that *lumbar ecchymosis*, contrary to the doctrine of Valentin and Larrey, is really of very little value as a diagnostic sign of the presence of blood in the cavity of the pleura. *Abscesses of the lung*, due to the presence of foreign bodies, were often observed in the recorded cases of chest wound, and, more rarely, the so-called "metastatic abscesses" of pyæmia. *Thoracic fistulæ* were observed in some cases, as were *secondary emphysema* and *pneumothorax*; *erysipelas*, *gangrene*, and *tetanus* were very rarely met with as complications of chest wounds.

As regards the *diagnosis* of wounds of the lung, Dr. Otis's investigations fully confirm the opinion advanced by Fraser and others, that none of the symptoms formerly regarded as characteristic of these injuries can be considered pathognomonic, though, when several are observed in combination, they furnish strong presumptive evidence that the lung has been wounded.

The *treatment* of gunshot wounds of the chest in vogue among military surgeons, has undergone a complete revolution within a comparatively recent period: it is indeed only since 1855, when Dr. Fraser published his admirable monograph, that it has really been questioned whether the profuse bleedings recommended by the older surgeons were absolutely necessary or even desirable. The evidence adduced by Dr. Otis from the records of our late war, would seem to settle this point definitively; it may now indeed—

"Be regarded as generally admitted that venesection is unnecessary in penetrating wounds of the chest, and that it may be very harmful, and that the 'draining of the system of blood,' commended by Bell, Hennen, Guthrie, and Cooper, is to be numbered with the errors of the past."

We have thus come to the end of Dr. Otis's magnificent volume, some idea of the value of which we have striven to give our readers, however inadequately, by means of analysis and extract. The work, as we said in the beginning of this review, scarcely admits of criticism, but no critic can hesitate to declare that in every respect it reflects the highest credit upon all concerned in its production, from the Surgeon General, under whose general supervision it has been prepared, down to the printer and engraver, who are directly responsible for its mechanical execution. The book is very handsomely, and, considering the immense amount of matter which it contains, upon the whole very correctly printed; it is elegantly illustrated with thirteen highly finished chromo-lithographic plates, and over three hundred well-executed wood-cuts. There is one deficiency in this volume, which we hope to see supplied when the whole history is completed; we allude to the want of an index. The arrangement of the work is such that the information furnished upon any one subject (as, for instance, degeneration of the common carotid artery) is necessarily scattered in different parts of the book, and, with merely the brief table of contents for a guide, it is often almost impossible for the student to find what he is in search of.

We sincerely trust that a most elaborate and carefully constructed index will yet be furnished; for, if it is not, the rich store of knowledge which Dr. Otis has with so much zeal and labour accumulated, will, we fear, be for most readers but buried treasure.

J. A., JR.

ART. XVIII.—*The Physiology of Man; designed to represent the existing State of Physiological Science, as applied to the Functions of the Human Body.* Vol. IV. *The Nervous System.* By AUSTIN FLINT, JR., M.D., Professor of Physiology and Physiological Anatomy in the Bellevue Hospital Medical College, New York, etc. 8vo. pp. 470. New York: D. Appleton & Co., 1872.

OUR readers will remember that three volumes of Prof. Flint's "Physiology" have already appeared, and have been critically examined in the pages of this Journal. These volumes were occupied with an account of the blood, circulation, respiration, alimentation, digestion, absorption, the lymph and chyle, secretion, excretion, the ductless glands, nutrition, animal heat, movements, voice and speech. The present volume, constituting the fourth of the series, is devoted entirely to the consideration of the Nervous System.

The whole of the first chapter is taken up with a description of the structure and chemical composition of the nerves, their branching, course, and mode of termination, and their capability of being regenerated after section or even excision of a portion of their substance. In describing the minute anatomy of nerves, Prof. Flint divides them into the simple or non-medullated, the medullated and gelatinous, following, for the most part, in his histological account, the well known observations of Robin, Kölliker, Fromman, Grandry, Schultze, Remak, and other eminent authorities in this special field of research.

The motor and sensory properties of the roots of spinal nerves, the influence exerted upon the nutrition of the posterior roots by their ganglia, the mode of action of both motor and sensory nerves, and the subject of recurrent sensibility are briefly discussed in this chapter. In this connection Dr. Flint devotes a considerable space—one-half, indeed, of the whole chapter—to a critical review of the claims of Walker, Mayo, Bell, and Magendie, as to the priority of discovery of the distinct seat of motion and sensation in the roots of spinal nerves. In a work designed to represent the existing state of physiological science, and issued as a text-book upon this science for the medical student, it was scarcely necessary to discuss this subject in such lengthened detail, especially as it had already been, as the author himself observes, correctly reviewed in the *London Medical and Physical Journal*, in 1829, by Elliotson in his *Human Physiology* in 1840, by Velpeau in 1866, and Bernard in 1867.

Chapter III. is devoted to the consideration of nervous irritability, the nature of the so-called nerve-force, and the phenomena produced by the application of electricity to the nerves. The well-known observations and experiments of Bernard and Longet upon the excitability of nerves, and the phenomena of the progressive disappearance of their irritability after excision; those of Prévost and Dumas, and of Matteucci and Longet show-

ing the non-identity of electricity and the nerve-force; those of Hirsch, Helmholtz, Baxt, Du Bois Reymond, Marey, Donders, and Schelske, on the rapidity of nervous conduction; those of Lombard and Schiff, upon the elevation of temperature in nerves during their functional activity, and those of Volta, Galvani, Matteucci, Guerard, Longet, Chauveau, Ritter, Bernard, Rousseau, Du Bois Reymond, and others, on the action of electricity in the nerves, are all set forth in a brief but very lucid manner.

In the next five chapters, comprising about one-third of the volume, Dr. Flint treats at considerable length and with much minuteness of detail of the physiological anatomy, properties, and functions of the cranial nerves.

The physiological anatomy and general properties of the spinal cord are described in the ninth chapter. The author here reproduces as the best account yet given of the minute anatomy of the cord, the distribution of its fibres and their connection with the nerve-cells, the description contributed by Gerlach to Stricker's *Handbook of Histology*. As the result of the most definite and reliable experiments and observations upon the physiological properties of the cord, he presents the following conclusions:—

“The gray substance is probably inexcitable and insensible under direct stimulation.

“The antero-lateral columns are insensible, but are excitable both on the surface and in their substance; *i. e.*, direct stimulation will produce convulsive movements in certain muscles, which movements are not reflex and are not attended with pain. The lateral columns are less excitable than the anterior columns.

“The surface, at least, of the posterior columns is very sensitive, especially near the posterior roots of the nerves. The deep portions of the posterior columns are probably insensible, except very near the origin of the nerves.

“The above conclusions refer only to the general properties of different portions of the cord, as shown by direct stimulation, in the same way that we demonstrate the general properties of the nerves in their course. In all probability, the fibres in the white and gray substance of the central nervous system conduct motor stimulus from the brain and sensory impressions to the brain, while they are themselves insensible and inexcitable under direct stimulation.”

Chapters X. and XI. are occupied with a detailed account of the action of the spinal cord as a conductor of motor impulses and sensory impressions, and as a nervous centre. It is now, thanks to the labors of Brown-Séquard, Velpeau, Phillipeaux, Longet, Van Kempen, and others, very well established that the fibres of the gray and white substance of the cord situated in front of the points of origin of the posterior roots of the nerves, and constituting what is known as the antero-lateral columns of the cord, though entirely insensible to direct irritation, serve as conductors of motor impulses from the brain to the periphery through the anterior roots of the spinal nerves. Division of these columns is followed by loss of voluntary motion in all parts below the section. If the injury be limited to the antero-lateral columns of one side, the resulting paralysis is confined to that side. When the posterior columns are divided, voluntary motion is not lost. It seems highly probable that the power of conducting motor impulses is not confined to the white substance but is also possessed by the gray. The motor conducting fibres, after decussating at the medulla oblongata and upper part of the cord, run down in the cervical region mainly in the lateral columns, and upon reaching the dorsal region pass chiefly into the anterior columns. Dr. Brown-Séquard has conclusively shown that the gray matter of the cord, especially that part surrounding the

central canal, is a conductor of impressions from the periphery to the brain. The white substance of the antero-lateral columns cannot, any longer, be regarded as conductors of sensory impressions to the brain. This is true also of the white fibres of the posterior columns, which appear to act commissurally, connecting the segments of the cord together and assisting in the co-ordination of muscular movements.

Whytt and Prochaska, in the latter part of the last century, and Legallois, Fodera, Mayo, Marshall Hall, and Müller, in the early portion of the present century, laid the foundation, by their experiments, of our present knowledge of the reflex action of the spinal cord. Whytt showed that impressions made upon the sensory nerves give rise to movements that are wholly involuntary. Prochaska declared that the motions of decapitated animals were reflex, took place without consciousness, while Legallois, Fodera, and Mayo showed that in animals in which the cord had been divided, the posterior limbs, when pinched or otherwise irritated, were thrown into motion without the animal experiencing any pain, and while the anterior limbs remained perfectly motionless.

The experiments of Marshall Hall published in 1832-33, are assumed by him to have demonstrated as follows:—

“A decapitated animal, the only part of the cerebro-spinal axis which remains being the spinal cord, will make no movements, if completely protected from all external impressions. An impression made upon the sensory nerves of a decapitated animal is reflected by the cord, through the motor nerves, to the muscles, and gives rise to reflex movements. If the cord be destroyed, no movements follow stimulation of the surface. If the centripetal and the centrifugal nerves be divided, no reflex movements can take place. Experiments upon decapitated animals accord with the results of observations upon acephalous foetuses, and in cases of complete paraplegia from injury to the cord. All of the involuntary movements observed in the healthy body are explained by the theory of reflex action.”¹

“It is easy to determine,” Dr. F. remarks, “that the muscular movements dependent upon nervous action, occurring in decapitated animals are due to the action of the spinal cord as a nerve-centre. In an animal in which the reflex phenomena are very marked, as they are after decapitation, especially if the animal be poisoned with strychnine or opium, all movements cease immediately when the cord is destroyed. That the gray matter of the cord is the part concerned as a centre in the production of these phenomena, is probable, in view of what we know with regard to the general functions and properties of this substance; and experiments have shown that this is the fact. If, in a decapitated frog, we make a longitudinal section of the cord in the median line, leaving only a slight communication between the two sides, we may sometimes succeed, by strongly irritating the skin of one leg, in producing reflex movements, not only in the same leg, but in the leg of the opposite side; and it is reasonable to suppose that the irritation is propagated from one side to the other through the cells of the gray matter.”²

The physiological division of the encephalon, and the general properties and special functions of the cerebral hemispheres, are considered in Chapter XII.

Dr. Flint maintains that the brain is not, strictly speaking, the organ of the mind, for this statement, he thinks, would imply that the mind ex-

¹ Marshall Hall, *Reflex Function of the Medulla Oblongata and Medulla Spinalis*, London, 1833; and, *Memoirs on the Nervous System*, London, 1837. Marshall Hall states that his first publication appeared in the *Proceedings of the Zoological Society*, in 1812.

² Longet, *Traité de physiologie*, Paris, 1869, tome iii., p. 260.

ists as a force independently of the brain. On the contrary, he believes that mind is produced by brain-substance, or, in other words, that intellectual force can be produced only by the transmutation of a certain amount of brain matter. With regard to the precise location of the faculty of language, a subject which has been so much discussed in treatises on aphasia, he says:—

“Taking into consideration all of the pathological facts bearing upon the subject, it seems certain that, in the great majority of persons, the organ or part presiding over the faculty of articulate language is situated at or near the third frontal convolution and the island of Reil in the left anterior lobe of the cerebrum, and mainly in the parts nourished by the middle cerebral artery. In some few instances, the organ seems to be located in the corresponding part on the right side. It is possible that, originally, both sides preside over speech, and the superiority of the left lobe of the brain over the right and its more constant use by preference in right-handed persons may lead to a gradual abolition of the functions of the right side of the brain, in connection with speech, simply from disuse. This view, however, is hypothetical, but is rendered probable by certain considerations, among the most important of which is the statement by Longet, that ‘one cerebral hemisphere in a healthy condition may suffice for the exercise of intelligence and the external senses.’ In support of this statement, Longet cites several cases of serious injury of one hemisphere without impairment of the intellect.”¹

The facts, both experimental and pathological, bearing upon the vexed question of the functions of the cerebellum are elaborately discussed by our author in Chapter XIII. It is well known that Flourens, many years ago, arrived at the conclusion that the cerebellum should be regarded as the nervous centre for the co-ordination of muscular motion. This view was based upon a series of well-executed experiments which have since been often verified by other physiologists. There can, indeed, be no doubt about the effects produced by the removal of the whole or portions of the lesser brain. The difficulty lies in the interpretation of these effects. Until lately most physiologists have been willing to adopt, not only the facts as set forth by Flourens, but also the conclusions which he based upon them.

There have not been wanting authorities, however, who, like Foville, Lussana, Goltz, and others, have refused to accept the co-ordination theory. Dr. Flint, after a careful examination of the experimental and pathological evidence bearing upon this subject, unhesitatingly concludes that the cerebellum presides over equilibration and the co-ordination of muscular movements, particularly those of progression. As the whole subject is one of considerable interest, the following extract is taken from the work before us as embodying the author’s positive and definite conclusions:—

“Confining ourselves still to the interpretation of experiments upon living animals, and leaving for subsequent consideration the phenomena observed in cases of disease or injury of the cerebellum in the human subject, we are led to the following conclusions:—

“There is a necessity for co-ordination of the movements of the general voluntary system of muscles, by means of a nerve-centre or centres.

“Whatever other functions the cerebellum may have, it acts as the centre presiding over equilibration and general muscular co-ordination.

“The cerebellum has its nervous connection with the general muscular system

¹ Longet, *Anatomie et physiologie due système nerveux*, Paris, 1842, tome i., pp. 666 *et seq.*

through the posterior white columns of the spinal cord, a fact which is capable both of anatomical and physiological demonstration.

"If the cerebellum be extirpated, there is loss of co-ordinating power; and if the posterior white columns of the cord be completely divided, destroying the communication between the cerebellum and the general system, there is also loss of co-ordinating power.

"When a small portion only of the cerebellum is removed, there is slight disturbance of co-ordination, and the disordered movements are marked in proportion to the extent of injury to the cerebellum.

"After extirpation of even one-half or two-thirds of the cerebellum, the disturbances in co-ordination immediately following the operation may disappear, and the animal may entirely recover, without any regeneration of the extirpated nerve-substance. This important fact enables us to understand how, in certain cases of disease of the cerebellum in the human subject, when the disorganization of the nerve-tissue is slow and gradual, there may never be any disorder in the movements."

Dr. Flint then proceeds to consider at some length, the pathological facts bearing upon the functions of the cerebellum. He tabulates and analyzes ninety-three cases of disease of the cerebellum quoted by Andral, and endeavours to show that they by no means militate against the generally received physiological doctrine of the function of the lesser brain.

"We now come," he continues, "to the main question, whether or not, in view of the results of experiments on animals and the phenomena observed in cases of disease or injury of the cerebellum, this nerve-centre presides over co-ordination of action of the muscles, which is certainly necessary to equilibration, except the muscles of the face and those concerned in speech. This question seems to us to be capable of a definite answer.

"Every carefully-observed case that we have been able to find, in which there was uncomplicated disease or injury of the cerebellum, provided the disease or injury involved more than half of the organ, presented great disorder in the general movements, particularly those of progression. We have collected the more or less complete reports of sixteen cases.

"Notwithstanding the contrary views of many physiological writers, we are firmly convinced, from experiments and a careful study of pathological facts, that there is no one point in the physiology of the nerve-centres more definitely settled than that the cerebellum presides over equilibration and the co-ordination of the muscular movements, particularly those of progression. In this statement, we make exceptions in favor of the movements of respiration, deglutition, of the face, and of those concerned in speech, as well as the involuntary movements generally. As another example of a nerve-centre presiding over muscular co-ordination, we have the instance of the portion of the left anterior lobe of the cerebrum, which co-ordinates the action of the muscles concerned in speech.

"The theory that the disordered movements which follow injury of the cerebellum are due simply to vertigo is not tenable. In only three of the cases cited, is vertigo mentioned; and in two, the word vertigo seems to be used rather as an explanation of the phenomena observed, than in their simple description. There is a disease involving the semicircular canals and other parts of the internal ear, called Ménière's disease, in which there is marked want of equilibration and muscular co-ordination, attended with, and probably dependent upon, vertigo. The vertigo is always very distinct, and is mentioned in all of these cases; and though it is less in the recumbent posture, it is never entirely absent. A very elaborate article on certain affections of the inner ear, including Ménière's disease, with numerous illustrative cases, was published by Dr. Knapp, in the *Archives of Ophthalmology and Otology*, New York, 1871, vol. ii., No. 1. A careful study of these cases, comparing them with the cases of deficient co-ordination from disease of the cerebellum, cannot fail to show a great difference between the phenomena following cerebellar disease and the muscular phenomena due to well-marked and persistent vertigo."

An account of the minute structure, properties and functions of the ganglia at the base of the brain, and the sympathetic nervous system, and a disquisition on sleep, its phenomena and the various theories which have been advanced at different times in explanation of it, constitutes the subject matter of the last three chapters of the volume under consideration.

In many respects Dr. Flint's work is an excellent exposition of the present state of our knowledge of the physiology of the nervous system. Though somewhat diffuse and occasionally prone to repetition, it is well written, and has evidently been compiled with much care and judgment from numerous and reliable sources.

J. A. M.

ART. XIX.—*Diseases of the Ovaries; their Diagnosis and Treatment.*

By T. SPENCER WELLS, Fellow and Member of the Council of the Royal College of Surgeons, England; Surgeon to the Samaritan Hospital for Women, etc. etc. etc. 8vo. pp. 478. New York: D. Appleton & Co., 1873.

IN turning to an examination of this very important work, we could not but feel that its appearance had been in no small degree anticipated. The author has been a frequent writer upon the subject for fifteen years past. In papers read before societies or published in journals, in a previous volume issued in 1865, in reports of cases by series of a hundred at a time, he has traced his progress in ovariectomy, and recorded his experience. Nevertheless the present work demands notice. It is written after the termination of five hundred completed operations, and therefore contains the fruits of an experience beyond that ever enjoyed by any other man. It is the crowning work of one who, it must be acknowledged, has long been looked upon as the highest authority upon the subject. These facts alone demand for it our attention, give to its contents a peculiar value, and will insure its hearty welcome by every one interested in this greatest surgical achievement of recent times.

It is scarcely necessary to say that the work is an original one. The author is in possession of too much material of his own, to occupy space with the opinions or labours of others, and we find very little matter of this kind in the book. On the other hand it is not a case book, and, while many cases are detailed in full, they are always interesting and instructive, as illustrative of the point in hand. The work is a record of the author's progress along a path in which he was one of the pioneers. He has traced his progress simply and unostentatiously; above all, in regard to difficulties and results, with scrupulous honesty. The student of the subject will find here not only a faithful teacher and guide, but one whose extensive experience enables him to give assistance upon points not generally treated of.

In a recent number of this Journal, we reviewed the works of Drs. Atlee and Peaslee upon ovarian disease and ovariectomy, and then entered upon an examination of some of the points relating to the subject which are especially new, especially important, or as yet undecided. In all these respects none can stand second to the value of an examination of the fluids of ovarian cysts as a means of diagnosis, and we naturally turned with

extreme interest to those parts of Mr. Wells's work which treat of this part of the subject. In Dr. Atlee's work the highest importance is attached to an examination of the fluids withdrawn by tapping, in cases of abdominal dropsy, as a means of differential diagnosis, and the existence of a peculiar cell, to be discovered by microscopic examination, is held to be pathognomonic of ovarian dropsy, and, therefore, a sure and reliable guide to diagnosis. We would fain have welcomed this as a most valuable addition to our knowledge, and scarcely dared to express doubts in regard to it, so emphatically was it stated, and so abundantly sustained by reports of cases, which seemingly furnished fair proof of its truth. Yet we felt compelled to hesitate in giving our assent to the doctrine from a most striking resemblance between the figures of the "ovarian corpuscles" of Dr. Peaslee's work and those of the inflammatory globules of Gluge of Dr. Atlee's, and, further, from the fact that we had nowhere seen any statement as to the existence of such cells given by men of authority in microscopy.

We perused, therefore, the parts of Mr. Wells's work which treat of this subject with more than ordinary interest. We find full descriptions of the microscopic objects to be found in the fluids and solids of ovarian tumours, we find descriptions and figures of various cells, but no mention of any particular one as peculiar to ovarian fluids alone. The nearest approach to the cell described by Dr. Atlee seems to be Fig. 18, and this is said to be "identical with the pyoid bodies of Lebert or the exudative cells of Henle." Not a word is said of these or of any other cells as being pathognomonic of ovarian fluids, or of their presence or absence as furnishing a reliable basis for diagnosis. This high authority does not, therefore, sustain a doctrine which would have been everywhere hailed as a substantial and valuable aid in those obscure cases in which the diagnosis is difficult even to the most experienced.

It may be as well to say, in concluding this part of the subject, that since the publication of Dr. Atlee's work not only has no confirmatory evidence of the existence of the peculiar ovarian cell been furnished, but, on the other hand, direct denial of its existence has been publicly made by men of experience in microscopic examinations, and who must be accepted as authority upon the subject.¹

But there is no doubt that most valuable information may sometimes be derived from an examination of the fluid of supposed ovarian tumour, some striking physical characteristics marking, most reliably, certain pathological conditions. Thus, a clear, limpid fluid, of very low specific gravity, non-coagulable by heat or nitric acid, seems to be pathognomonic of cysts of the broad ligament, a form of disease which is, generally, permanently cured by a single paracentesis. This doctrine is plainly taught by both the American authors above alluded to.² Now upon examining Mr. Wells's work we were not a little surprised to find no recognition at all of cysts of the broad ligament as a pathological condition. It is especially remarkable since these cysts were recognized in England by Dr. Frederick Bird and Mr. Cæsar Hawkins before 1850, and by Clay at a still earlier date.³ There is no recognition, by name, of cysts of the broad ligament; they will of course certainly fall among those cysts alluded to (p. 230) as "extra-ovarian," and there is also recognition of the fact that such cysts "may

¹ Proceedings of the Pathological Society of Philadelphia: Phila. Med. Times, April 12, 1873, and Med. News, May, 1873, p. 75.

² Atlee, Chap. II. Peaslee, pp. 99-102.

³ Peaslee, p. 100.

be not only temporarily emptied, but emptied with the probability that the fluid will not collect again," and cases illustrative of this fact are detailed in the book. Upon the same page there appears also to be a recognition of the limpid character of the fluid, and the extra-ovarian cyst, but only seemingly as coexistent, both to be suspected

"1st. When it [the tumour] has been of many years' duration with very little damage to the general health; and 2dly, when it has formed with such extreme rapidity as to be almost certainly mistaken for ascites."

But the important and noteworthy point is that we nowhere find that distinct statement of the doctrine that this kind of fluid indicates this kind of cyst, no effort to impress the value of the fact, no direction for withdrawal of a specimen of the fluid for examination, and as an aid to diagnosis, which we should have expected. In practice, we cannot doubt that Mr. Wells estimates all these points at their true value and governs himself accordingly, but here we are concerned with the teachings of his book, and in this respect feel compelled to say that it is not up to that of other writers upon the subject.

We pass to one more point relating to an examination of the fluids as an aid to diagnosis. The close resemblance of fibro-cystic tumours of the uterus to ovarian tumours is well known; a differential diagnosis between these forms of disease being confessedly the most difficult of all. Neither size, position, nor shape of the tumour, not even fluctuation, or hardness, or any other physical condition affords any assistance, nor does the history of the case or age of the patient, nor can any reliance be placed upon the facial expression, as Mr. Wells confesses, although he lays considerable stress upon a certain physiognomy belonging to ovarian disease, and he finally says that "some cases can only be cleared up by an exploratory incision," and this is the testimony of all writers. Under these circumstances it is but fair to expect mention of every sign likely to aid in making a diagnosis; it may be that the sign is not yet positively proved to be available or to have any great value, yet if any one person of considerable experience has found it of service in diagnosis, it certainly deserves statement and consideration. Such a sign there is, and its value has such support. We allude to the spontaneous coagulability of the fluid, on exposure to the air, withdrawn from fibro-cystic uterine tumours as indicating that the disease is not ovarian. This doctrine is distinctly taught by Dr. Atlee, and great stress laid upon it as a means of diagnosis. Although no stress is laid upon it by Dr. Peaslee, yet this characteristic of the fluid of the fibro-cystic tumours is mentioned as one of the points for a differential diagnosis. In regard to these tumours Mr. Wells says:—

"Even after an exploratory incision, I know of nothing but a rather darker—less pearly blue—aspect of the tumour which would put the surgeon on his guard. In any doubtful case it would be well to tap the largest cyst and examine the fluid. In both my cases this was peculiar; not the viscid mucoid fluid of multilocular ovarian cysts, but a thin serum, with five, ten, or fifteen per cent. of blood intimately mixed with it, and not separating until after standing for some hours. In this way I have satisfied myself, in at least four cases, that tumours, which others considered to be ovarian, were really fibro-cystic uterine growths."

This is the only mention of the character of the fluid of fibro-cystic tumours, and "after eight years' further experience," since this was written, the author has nothing more to add. Yet in Dr. Atlee's work we have the explicit statement (p. 263), that Mr. Wells's attention was called to

this point by him as long ago as in 1867. We can only conclude again, and are forced to this conclusion from various considerations, that in practice the author is in advance of his book.

Possibly one fact stated and commented on by Dr. Peaslee (pp. 106-7), may have some bearing upon this point. We allude to the undoubtedly far greater frequency of occurrence of fibro-cystic tumours of the uterus in this country than in Europe; a fact which seems well authenticated and is certainly singular.

There are some points relating to the differential diagnosis of ovarian disease, in regard to which this work is particularly full and complete from the vast experience the author has enjoyed. One of these is renal-cyst, less interesting for our consideration here, because more rare, than another—pregnancy—a condition occurring every day and likely at any moment to present perplexing questions to every practitioner for solution. The ordinary signs of pregnancy are considered in detail; especial mention is made of the “secondary areola” around the nipple, which does not, however, make its appearance until the end of the fifth month, as a sign “which may be relied upon with great confidence, provided the woman has never been pregnant before;” the deep violet or purple hue of the vagina “does not occur in ovarian disease unless complicated with pregnancy;” and the changes which take place in the consistency, as betrayed to the touch, of the os and cervix uteri, are well stated to be of great importance. These changes “are perceptible even during the first month after impregnation” to a careful and experienced observer. Still, mistakes may be made.

“As the irregularities of an ovarian tumor [*felt per vaginam*] often simulate very closely those of the breech or shoulder, or other portions of the fœtus which might be supposed to be present. I have known one of the best writers and teachers of midwifery declare that he could feel the foot of a child—both heel and toes—yet this was only part of a malignant ovarian tumour.”

The most valuable portion of this part of the work is that upon ovarian disease complicating pregnancy, as the occurrence of a case to us not long since gave us reason to appreciate. For counsel and assistance in its treatment we were driven to ransack journals, and found only here and there any help, and indeed scarcely any, except some articles from the pen of the author. Now the profession has at command and for easy reference an array of cases and the lessons learned from their observation. Pregnancy having occurred in a patient afflicted with an ovarian cyst, the first plan considered is that of letting her alone and doing nothing. Three cases, the author has seen, in which pregnancy thus passed over safely to its termination for both mother and child. These cases, however, are justly considered exceptional.

“I cannot remember one other case where pregnancy complicated with ovarian disease has gone on to its natural termination in the birth of a living child; or where, in consequence of non-interference, great suffering has not arisen during or after labour, or very grave danger from rupture or rotation of the cyst; or where it has not been necessary to guard against threatening danger, and either to tap the cyst or to induce premature labour.”

Interference, then, should be the rule, and that interference by tapping, since by premature labour the child is certainly lost. The author has had five cases of patients tapped during pregnancy, one of them submitted to the operation three times, and all of them went through their pregnancy

well and gave birth to living children. Three times he has seen spontaneous rupture of the cyst and death before the seventh month.

No less interesting and valuable to the ovariologist are the cases, and remarks upon them, in which during the progress of the operation the existence of pregnancy was first discovered.

First in order, among the measures of treatment of ovarian dropsy, stands tapping, and in regard to its advisability the widest difference of opinion has been expressed by equally high authority. Passing from the "tapping is a crime" of Stilling, at one extremity of the scale, we find, at the other, those who consider it scarcely, if at all, more serious for this disease than it is for ascites. It is to be considered in two aspects: 1st, as to its absolute danger; 2d, as to its influence upon subsequent ovariectomy. In regard to the first, the author belongs to that class who do not estimate tapping as a very dangerous operation; but as one which may be resorted to without hesitation whenever circumstances demand it, and we do not find that he makes so marked a distinction between the danger of tapping different kinds of ovarian cysts as the multilocular or simple.

"Simpson's calculation was that the mortality after first tapping was not less than one in six. Under the present simplified mode of tapping, I very much doubt whether it is as much as one in sixty. I believe it is considerably less than this in my own experience."

He contrasts the "present simplified mode" of operation with that "formerly practised," but how long ago thus practised he does not say. We certainly have never seen, in our time, and we can speak for twenty-five years, anything of an operator "using a trocar like a dagger" and stabbing the patient with considerable force! nor were we thus taught to operate, although we received our instruction in a section of the world believed to be remote from the centres of civilization and medical learning.

A careful performance of the operation has, of course, much influence upon its results:—

"Great difference of opinion has been expressed as to the danger or harmlessness of admitting air into an ovarian cyst while the fluid is escaping. Some writers have argued that it can do no harm. My own opinion, founded upon the few cases where I have been quite sure that air has entered, is very decidedly in accordance with those who assert it to be frequently followed by decomposition of the fluid which remains in the cyst, or is secreted soon after tapping, by cyst inflammation, and the fever which accompanies it."

In regard to the second point—the increased mortality of ovariectomy after paracentesis has been performed—the decision is, that it is not increased. The author has carefully studied the record of his five hundred cases, some of them tapped as many as eighteen times, some not at all, and presents the facts bearing upon this point in a tabular form. The following are his conclusions:—

"1. That one or manyappings do not increase considerably the mortality of ovariectomy.

"2. That tapping may often be a useful prelude to ovariectomy. . . .

"3. That when the siphon-trocar,¹ which I brought before the profession in

¹ The siphon-trocar is modelled upon one invented by Mr. Charles Thompson of Westerham, and to whom it is credited by Mr. Wells, and figured on page 267. The arrangement of this latter effectually guards against the admission of air, and it is no more complicated, and but little more expensive, than the ordinary in-

1860, is carefully used in such a manner as to prevent the escape of ovarian fluid into the peritoneal cavity, and the entrance of air into the cyst, the danger of tapping is extremely small."

Tapping through the vagina receives due consideration and the author's experience is detailed. This measure is said to be "much more liable to be followed by inflammation of the cyst than tapping through the abdominal wall."

Tapping with injection of iodine has not been very successful in the hands of the author. In two cases where the cysts did not refill for several years, he believes the same result would have followed simple tapping.

We find no mention of the modification of tapping, or exploration, by Dieulafoy's aspirator, the hypodermic syringe, or other similar means.

Besides the usual interest attaching to the subject of anæsthesia during ovariectomy, from the influence it must exercise upon the results of so severe, and often prolonged, operation, we find an unusual interest in this volume from the author's experience with a new anæsthetic, and one so little used and known in this country, that we give pretty fully the remarks made upon it. With chloroform Mr. Wells soon became dissatisfied from the frequency with which severe and continuous vomiting followed its administration, and the unpleasantness of ether, and the difficulty of procuring complete insensibility with it, led him to make trials of mixtures of the two in varying proportions. To these he found the same objection which Snow has urged; the more volatile liquid evaporated first leaving the more dangerous for sole inhalation, thus exposing the patient to greater danger because already fully narcotized and the surgeon under the influence of a fancied security. We are fully satisfied that the addition of alcohol, as in the mixture recommended by the committee of the Royal Medical and Chirurgical Society, obviates this objection and furnishes an anæsthetic, as we have before taken occasion to urge, peculiarly adapted to ovariectomy.¹ In the author's hands this mixture "appeared to answer better" than the others, but while experimenting with it, Dr. Richardson brought forward the bichloride of methylene. It is this new anæsthetic which Mr. Wells has since used, and so far as we know he has had the most extensive, as well as the earliest experience with it. He performed the first operation ever performed upon a patient under its influence in October, 1867. Since then it has been the anæsthetic employed for about two hundred and eighty cases of ovariectomy. And

"In some 35 other cases of gastrotomy, and in more than 100 operations of more or less severity—such as herniotomy, amputation of the breast, removal of mammary or other tumors, or of hæmorrhoids, and plastic operations for the cure of vaginal fistula or ruptured perineum—chloro-methyl has been administered for all. . . . In very few of these operations was the condition of insensibility to pain maintained for less than five minutes. In a few, it was kept up from forty-five minutes to an hour or more, and I should think the average would be about fifteen minutes. Yet I have never been at all uneasy in any one of these cases, more than 350 in number, either during the administration of the anæsthetic or from any subsequent ill effects fairly referable to it.

strument. Now that paracentesis thoracis is becoming so prominent as a therapeutic measure, we do not see why this instrument should not entirely take the place of the ordinary trocar and canula for every purpose except, perhaps, the operation for hydrocele.

¹ Mr. Bryant in his "Surgery" (Am. ed., p. 613) strongly recommends this mixture for ovariectomy.

. . . It is quite true that chloro-methyl has also the disadvantage of causing nausea and occasional sickness; but in my experience, this is almost the rule with chloroform, whereas with chloro-methyl it is certainly exceptional. . . . The patient very seldom becomes pale, she sleeps quietly, awakes quietly, is not often sick. . . . Indeed, she gains all the advantages of complete anæsthesia with fewer drawbacks than I have ever obtained by the use of any other anæsthetic."

This is a glorious record! to be hailed with gladness alike by the surgeon and the philanthropist. Having long been convinced that neither ether nor chloroform (except in obstetrical practice) will be the anæsthetic of the future, we trust that it is now found in bichloride of methylene and the long wished for power of producing unconsciousness to pain without danger is at last at our command.

It is not our purpose to enter into the details of the operation; the space already devoted to diagnosis and other subjects of more general interest, precludes it. It is scarcely necessary to say that every step of the operative procedures is fully described and commented on. We find twenty-two pages devoted to the management of the pedicle. The author is well-known to be a strong advocate of the extra-peritoneal method of treatment, and his "clamp" is equally well known everywhere. To this plan of treatment and to this instrument he still adheres, admitting that his success with the ligature has not been as good as that plan of treatment seems to deserve, and stating that his later and wider experience has furnished nothing to shake his confidence in the superiority of the course he has generally pursued.

It would seem as if the pedicle question of ovariectomy ought to be settled by this time. The amount written upon it and the ingenuity expended in devising new and often complicated modes of treating it, have been immense. It has been settled. Under different, and often widely different, modes of treatment, each believed by conscientious men to be the best, the mortality has varied so little as to prove that no particular mode of procedure is essential to success, and Mr. Wells endorses this verdict when he says that "no surgeon who has had much experience of ovariectomy would bind himself to adopt in all cases either the extra-peritoneal or the intra-peritoneal method, or any of the modifications by which either principle is carried out in practice."

In regard to closing the wound after the operation the author says:—

"The including of the peritoneum within the stitches is of the *utmost importance* for the success of the operation."

We quote this only to say that one of the American operators who stands among the highest as to number of cases and ratio of success, pursues just the opposite course and believes his plan to be equally important! Mr. Bryant, too, no mean authority in ovariectomy, after having tried both plans, says, "upon the whole I do not think the matter of much consequence."

We find no notice of the enucleation of ovarian tumors, and in regard to the washing out of the peritoneal cavity by injections as practised and advocated by Peaslee and Marion Sims, the author says he has followed the plan in a few bad cases but never with success.

We are forced to make some remarks upon Mr. Wells's account of the "rise and progress of ovariectomy," which we would gladly have omitted were the compulsion from any less source than a deep sense of duty. We

regret to find in Mr. Wells's pages a lack of that generous accord of honour where it most justly belongs, which we certainly did not expect, for no one could better than he afford to be magnanimous, together with an evident effort to claim honour for his own countrymen at the expense of others. We will not do either Mr. Wells or our readers the injustice of making only general statements upon so important a point, but quote the specifications from the pages of the work.

"No one can dispute the validity of the direct claim of McDowell as designedly the first rational ovariologist. At the same time it must be maintained that the still greater merit of pointing out the absence of any physiological reasons against the operation, the possibility of its safe performance in the human female, and the class of cases in which it ought to be admissible, is due to a series of eminent British surgeons."

Why and how, let us ask, is it "the still greater merit" to propose a new and untried operation than to perform it? Is not this to reverse the usual accord of honours in scientific discovery? Then Sir Humphry Davy must stand higher in the history of anæsthesia than Horace Wells, and Jackson than Morton, and above Simpson, falling insensible under the table from the effects of the yet untested chloroform. But not by this rule have honours been heretofore awarded; the actor and achiever has always received, as he deserves, the highest honours, and before him the proposer is but a subordinate. Does the proposition of ovariectomy belong only to "a series of eminent *British* surgeons?" Mr. Wells's pages contain mention of Schorkoff, 1685, and Schlenker, 1722, and Willius, of Basle, 1731, and Ulric Peyer and Delaporte and Morvand. There could be no clearer proposition of the operation, nor more positive conviction of its feasibility expressed, than by Chambon, 1798, which Mr. Wells gives, and which were published eleven years before the first operation was performed. None of these were British surgeons, and they deserve their credit, nor is it necessary to detract from that of the Hunters and Bell to give it to them.

If to Dr. McDowell is accorded the honour of being the "first rational ovariologist," it is but scant praise that is meted out to him. After a page of special pleading in favour of British surgeons who, in view of the "sacredness of human life," "shrank from the responsibility" of first attempting the operation, the author says:—

"But McDowell was a free man, in a new country, clear from the conventional trammels of old-world practice, found his patients in the most favourable conditions of animal life, seems to have had one of those incomprehensible runs of luck upon which a man's fate and reputation so often turn if he has the sagacity and energy to put such fortunate accidents to good account, and was happy, as those usually are who can afford or constrain themselves to wait, in finding suitable time, place, persons, and opportunity for testing the exercise of his young American 'felix temeritas,' based upon and guided by the Scotch 'perfidium ingenium' of his tutor Bell. He lost only the last of his first five cases of ovariectomy, and thus, as it were, established at the outset the natural standard of mortality which may be expected for so serious an operation."

But this is not all. Mr. Wells quotes, on the authority of Dr. Atlee,¹ a case "which claims the priority of McDowell by more than a century." It is the case of Dr. Robert Houstoun, 1701; a case which, if the words of the operator himself mean anything, was no more than the incision of an

¹ In this Journal, vol. xvii., 1849, p. 534.

ovarian cyst or cysts and evacuation of the contents. Yet Mr. Wells remarks :—

“From this case it will appear *that ovariectomy originated with British surgery on British ground!*”

Yet, on the preceding page, Mr. Wells has rejected L'Aumonier's case, 1776, as one of ovariectomy, to which it has as good claims as Dr. Hous-toun's. Is this done because L'Aumonier was not a *British* surgeon? for some French writers still claim this as the first ovariectomy!¹

We had supposed it unnecessary at this late day to vindicate the rightful claims of Dr. McDowell and of our country to their proper position in the history of ovariectomy. The above quotations show that we were labouring under a mistake, and other facts indicate the same thing. But recently two of the leading journals of Great Britain have contained the report of the first ovariectomy in one of the largest cities of the east, and the operator and reporter speaks of it as “this peculiar triumph of British surgery!” And here we have not only grudging acknowledgments made on one page, with counter claims on the next, but the direct assumption of the honours of the discovery. We cannot afford to pass in silence such attempts to withhold from us our just due. Short as has been our time among the nations of the earth, we have rendered some service to the progress of the race and the advance of medical knowledge, and however much or however little we have done, the last to which we would consent to surrender our claims would be our contributions to the progress of anæsthesia and ovariectomy.

Notwithstanding this blemish in regard to the historical portion of the subject, we cannot avoid congratulating Mr. Wells upon the appearance of this work. It is the crowning act, thus far, of a life which we trust is yet far from its close, full of success and usefulness and advance of our art. His devotion to the subject; his early success; his earnestness; above all, his scrupulous honesty in reporting results,—that prime quality of a scientific man who enters upon a new field of research—these gave him the confidence of his professional brethren, and his fortunate insular location, surrounded by a teeming population, furnished him the *matériel* for an experience surpassing that any other man has ever enjoyed, or probably ever will enjoy, and of which he has made good use. But, in congratulating him upon his success, we will not attribute any part of it to “one of those incomprehensible runs of luck” which sometimes favours mortals, but upon the possession of excellent qualities and the development of his powers. He has made for himself a most prominent and enduring name in the history of ovariectomy, and it will be written of him as he writes of McDowell, “As a surgeon he was exceedingly cautious, calm, and firm; paying great attention to the details of his operations and treatment, and selecting and drilling his assistants with much care.” J. C. R.

¹ See Dr. Peaslee's work, Part II., Chapter I., On the Early History of Ovariectomy.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XX.—*Saint Bartholomew's Hospital Reports*. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. VIII. 8vo. pp. 208. London: Longmans, Green & Co., 1872.

SUCCESS seems thus far to have attended the issue of the volumes of this series, and this success is not surprising when we remember the distinguished gentlemen who compose the medical and surgical staff of St. Bartholomew's Hospital. The present volume is made up of twenty-five papers, most of which contain matter of interest to the members of our profession.

We shall first call attention to the medical papers in the volume.

Dr. W. B. KESTEVEN contributes a paper *on the Morbid Histology of the Spinal Cord*, in which he has confined himself to the endeavour to present a general outline of the principal changes to which the spinal cord has been found by pathologists to be obnoxious. It presents a very good résumé of what is known of the healthy and morbid anatomy of the cord, and of the best method of preparing it for examination, but contains nothing which has not already, in some form or other, been laid before our readers.

Dr. SAMUEL J. GEE is the author of two papers, one on *Meningitis* and *Otitis Interna*, the other on *the Urinary Phosphates in Ague*. In the first the author contends that the connection between *otitis interna* unattended by any disease of the bone, and purulent meningitis, has been for the most part overlooked. In some cases the symptoms of otitis precede those of meningitis, in others, the symptoms of meningitis precede those of otitis, and in others, the symptoms of otitis are latent throughout. Of the existence of the first class of cases, we presume there is no doubt, but we are not inclined to admit the inflammation of the internal ear is a frequent cause of meningitis without giving rise to some symptoms by which its existence may at least be suspected.

In the second article Dr. Gee says the results of his experiments have shown that "the phosphoric acid followed a type of its own in its variations as to quantity at different periods of the paroxysm. At or soon after the first rise of temperature, the quantity of phosphoric acid began to fall below the standard of the apyretic period. This fall continued throughout the effervescence, and reached its lowest point an hour or two after the acme. Then the quantity of phosphoric acid began to increase, so that, at the completion of defervescence, it was nearly twice or thrice the normal. The hourly fall and rise were singularly progressive, and as before said, independent of the quantity of water."

Dr. DYCE DUCKWORTH is the author of three papers on diseases of the Skin, as follows: *Clinical Observations upon certain Skin Diseases*. *On Molluscum Contagiosum* of Bateman. *On the Nature and treatment of Porrigio decalvans (Area Celsi).*

In the first paper are contained the clinical histories of several interesting cases of skin diseases, such as morphea, congenital xeroderma, lichen planus and ruber, and chronic pemphigus. Dr. Duckworth also reports a case in which favoid crusts were found together with patches of *tinea circinata*. His own examination of these crusts led him to believe that they were mere aggrega-

tions of the trichophyton, but Dr. McCall Anderson, by whom the crusts were likewise examined, thought that the fungus present was the *achorion schönleinii*. Dr. Duckworth says, however, that first, the affection resembled in no particular favus of the body, further then that there were present two or three very minute favoid masses upon one of the affected surfaces; secondly, sporules were found of precisely similar character, on all parts of the diseased areas; thirdly, there was no favus of the scalp, and there was no mousy odour about the patches; lastly, favus of the body is a rare affection. We are inclined to believe that this last statement is not strictly correct. It is certainly not in accord with our experience. A few years since we had the opportunity of observing a well marked case of favus in which the lower extremities and a portion of the body were covered with favoid crusts. The patient, who had been employed in a menagerie, asserted that he had caught the disease from a monkey.

Dr. Duckworth in the course of this article takes occasion to speak highly of the employment of simple olive oil by inunction in the treatment of psoriasis, and we have no doubt that many ointments owe their value to the oleaginous matter which they contain.

In the second paper the author refers to several cases of molluscum in which the disease seemed to have been induced by contagion, but he admits that there are also cases in which it seems to have arisen from some other cause. Most observers are, he says, agreed in attributing a large share in the causation of the disease to dirty habits and non-observance of the ordinary rules of hygiene, but there is evidence also to show that molluscum may appear, and in a severe form, too, upon persons so exceptionally clean as the frequenters of Turkish baths. He further says that certain persons of both sexes and at different ages are more than others liable to nutritional changes in their sebaceous system, and that this is especially true of infants, young children, and women. He rejects the theories as not proven which attribute the disease to the intrusion of parasites into the sebaceous follicles, and to epidemic influence. He therefore concludes that molluscum may arise sometimes in consequence of direct stimulation of the skin; also, as a tropical change following a local neurosis, or accompanying the condition of pregnancy.

In the last paper Dr. Duckworth maintains that the existence of a fungus in *Porrigo decalvans* or *alopecia areata* has not been demonstrated, holding that microscopist and dermatologist have mistaken particles of sebum for the sporules of a fungus. Inasmuch as the reasons for believing that the disease depends upon a defect of nutrition have been very clearly and succinctly given by Dr. L. A. Duhring, of Philadelphia, in a contribution to the number of this Journal for July, 1870, we do not think it necessary to present our readers with an abstract of this paper, especially since it contains little that will not be found in the article already referred to. Among those who assert that they have discovered the *microsporon Audouinii*, the fungus upon which *Porrigo decalvans* has been supposed to depend, are, Robin, Wedl, and Hebra, who, it seems to us, are scarcely likely to have mistaken particles of sebum for the sporules of a parasite.

The treatment recommended by Dr. Duckworth consists in the application of turpentine to the bald patches by means of sponges. The growth of hair, when it recommences, may be stimulated by constant shaving.

In a paper *On Cirrhosis of the Liver*, Dr. J. WICKHAM LEGG says that his observations have led him to the conclusion that it is highly probable that the liver cells themselves help in the general formation of connective tissue. After

remarking that but little attention has been paid to the changes in the hepatic cells, he says, they are greatly altered in both size and shape.

"They may be diminished to a quarter of their natural size, or become as small as two white blood-corpuscles would be together. This change in size may be traced, passing from the midst of the lobule to the point where the cells become lost in the growing connective tissues. They are known to be the same cells, because they contain similar nuclei and contents, which contents, however, frequently become paler the farther removed the cell is from the centre of the lobule; the cells also change greatly in shape. They become oblong, spindle-shaped, oval, or egg-shaped. The oblong-shaped cells predominate; and drawn out from their corners, may occasionally be seen filamentous processes, not unlike the appearance of a unipolar ganglion cell. These processes sometimes inosculate with similar offsets from other cells."

The conversion of the hepatic cells into connective tissue is not such an impossible idea as it may at first sight appear, when it is remembered that the change of liver cells into connective tissue has already been observed in the process of repair following certain wounds of the liver.

In a second contribution Dr. LEGG gives us the history of some *Cases in Morbid Anatomy* as follows: 1, Hydatids of the spleen and liver. 2, Escape of hydatid cyst into bile duct. 3, Disease of the pulmonary valves. 4, Syphilitic gumma of the heart. 5, Fibrous degeneration of the muscular fibres of the heart. The case of hydatids of the spleen is interesting, inasmuch as the parasite has not often been detected in this organ, and when detected, it has always been found also, as in this case, either in the liver or in the diaphragm. In the second case, both the common and hepatic ducts were seen to be distended to the size of a finger. Following the hepatic duct into the liver it was found to contain hydatid membranes, and in the right lobe where the liver is thickest, the duct opened into a large abscess, from the opening of which a part of the hydatid cyst was still protruding. The escape of hydatids into the bile ducts is not a very uncommon event. Dr. Legg refers to a case reported by Dr. Church, in which this natural cure was being accomplished when the patient unfortunately died of epistaxis. The three cases of disease of the heart are interesting, but with the exception of the case of syphilitic disease do not call for special notice here. The gummatous tumour in this instance was seated in the walls of the left ventricle at its base, and close to the septum behind. Near to the edges of the new growth, sections showed a transparent or slightly fibrillar matrix, in which nuclei usually round and varying in size from a white to a red blood-corpuscle were seen. Nearer to the middle, the nuclei became far more abundant, filling the greater part of the field, while the matrix was distinctly fibrous. Around the nuclei there could in some places be discerned with difficulty cells, mostly round and having a diameter just double that of the nucleus; in other cases, oval or spindle-shaped. In the middle of the growth the sections showed a confused, highly granular mass, and in this case fibres could be distinctly made out. The author looks upon this rapid change of the nucleated tissue into an amorphous granular mass as very favourable to the supposition that the growth is a gummy tumour of the heart. A general tuberculosis was not present in this case, so that all idea of tubercle, he thinks, may with safety be excluded. Sarcomata of the heart are never primary, and no other tumour could be discovered in the body (*Virchow Geschwülste*, Bd. ii. 442).

In an article on *the Degeneracy of the Teeth*, Mr. ALFRED COLEMAN confirms the general impression, that the teeth of the present generation are inferior as regards their strength and durability to the teeth of past generations, referring to some observations which he made in the crypt of Hythe Church, in Kent, in which are collected several hundred skulls. Two hundred of the skulls were

taken promiscuously, and the condition of the teeth carefully noted. Against these a comparison was afterwards made by the examination of the teeth of the same number of healthy individuals; and making, he says, the most liberal allowance for the uncertainty as to the state of the absent teeth in the old skulls, there could be no doubt respecting the fact that they were in their day and generation far less liable to disease than are the teeth of the present generation. Mr. Coleman traces this degeneracy of the teeth to the "condition of modern civilization." In the first place, in consequence of the greater prominence of the jaws of savages, the dental arches are more capacious and there is less crowding of the teeth than among civilized races. As causes for this departure from the uncivilized to the civilized type, two explanations have been offered. In the first it is referred to a breeding in by selection. Those whom we deem good looking, and who are most likely to marry early, and as a consequence have the largest number of children, are not persons having prominent teeth. Were our notions of the beautiful, as regards our own species, the reverse of what they are, the author thinks there is little doubt but that prominent teeth and well-developed dental arches would be the rule, and not, as we now find them, the exception.

The second reason, that the teeth of the present generation are inferior to those of preceding generations, is simply because the refinements of civilization have made them less necessary than formerly. Thus the use of the knife and fork, and the comparative perfection of the culinary art, have rendered the office of the incisors almost a sinecure, and the functions of the molars are so replaced that, the author says, we not unfrequently hear the edentulous remark that they can get on pretty well if they give themselves a longer time and cut up their food pretty well.

To prevent the decay of the teeth Mr. Coleman lays down the following rules: 1. The relief of overcrowding by removing those teeth which experience has shown to be most liable to disease, and these are the first molars. 2. The use of bread made of whole meal flour, which, besides being more nutritious than we commonly eat, would give our teeth much more exercise and our gums a more healthy stimulus. In this connection the author takes occasion to recommend that a child's universal liking for a bone to suck and gnaw should be indulged, believing that the increased flow of blood to the gums which is thus brought about fulfils a most important indication. 3. Constant attention to the condition of the teeth. The same civilization which has introduced the knife and fork, has to a certain extent atoned for it by the introduction of the tooth-brush. A thorough use of this will, the author believes, counteract all the evils of the former. It is not the mere cleansing that will do good; the very friction will harden the teeth and preserve the gums in a healthy condition.

Sweet things as articles of diet are injurious, chiefly by impairing the digestive processes. In regard to medicines, Mr. Coleman says he has witnessed the worst results from the long-continued use of the tincture of the chloride of iron, and he thinks that these are not prevented by taking it through a tube. He recommends that whenever it is taken the mouth should be rinsed with a strong solution of potassa or of the bicarbonate of soda. Of the acids, he regards sulphuric acid as the least injurious, for the reason that sulphate of lime is not soluble in it.

The *Condition of the Muscle in Pseudo-Hypertrophic Muscular Paralysis* has been the subject of some investigations by Mr. HENRY T. BUTLIN, the results of which do not appear to have differed materially from those already put on record by other observers. Thus an increased amount of connective tissue, together with a diminution in size of the muscular fibre and a loss of its

striations, was found in three cases examined by the author. An undue amount of oil was also noticed, and Mr. Butlin thinks it not unlikely that this is most abundant in the late stages of the disease. He thinks that the following may be *supposed* to be the progress of events in this affection.

"In the earliest conditions of the disease, the very small quantity of connective tissue which normally exists between the muscular fibres becomes increased in quantity and fibrillar, whilst the large quantity of connective tissue between the primitive bundles undergoes a proportionately still larger increase. Later a deposit of fat takes place in this newly-formed tissue, probably in the cellular element, and the deposit is most abundant where the connective tissue is in greatest quantity. As this deposit increases, it forms for itself wider and wider meshes in the connective tissue, until at last a true adipose tissue is produced."

Under the name of the *So-called Bed-sores in the Insane*, Dr. T. C. SHAW describes a condition which he says is not uncommon. These gangrenous patches are distinguished from true bed-sores by *rapidity of formation, occurrence on parts of the body not subjected to pressure*, as well as over the sacrum and trochanters, and by *general appearance*. Commencing by redness in a circular area (or rather a lividity denoting considerable venous congestion), in a very short time the skin dies, and a hard black patch is formed. After a period varying more or less from a couple of days to a week, the black patch separates together with the dead parts beneath it, and a cavity is left, which is, in some cases, slowly filled up by granulations, in others remains as a cavity until death occurs from exhaustion. He believes that the cause of this accident is the blocking up of the vessels in a definite area, and consequent death of the part so included.

The treatment the author recommends is to cut out the "patch" as soon as possible, and all the underlying dead tissues, down to the muscle if necessary, and to fill the cavity thus produced with "marine lint," which is both stimulant and antiseptic. In a short time granulations are said to form, and if the edges of the ulcer are brought closely together by plaster, a cure may be effected.

The last article in the volume is "*The Proceedings of the Abernethian Society for the Winter Session 1871-2.*" This society is composed of the teachers and students of St. Bartholomew's Hospital, and holds its meetings every week during the session. Many interesting papers appear to have been read before it, and in the discussions which followed the students appear to have taken part.

J. H. H.

We shall now invite our readers' attention to those papers which are more particularly addressed to surgeons, and first to some interesting remarks by Mr. WILLIAM S. SAVORY, F.R.S., *On Amputation for Traumatic Gangrene*. The author calls in question the propriety of the rule, since Larrey's time, ordinarily laid down by surgical writers, that, in cases of what is technically called "traumatic gangrene," amputation should be performed without waiting for the establishment of a line of demarcation; and justly remarks that when the occurrence of gangrene is obviously due rather to the depraved constitutional condition of the patient than to the severity of the local injury the prognosis of any operation will necessarily be very unfavourable. It may be that we have missed Mr. Savory's meaning, but it seems to us that he fails to draw a sufficiently clear distinction between the various forms of gangrene met with in surgical practice: every case in which gangrene follows an injury may, no doubt, in one sense, be called a case of traumatic gangrene; but, as we understand the term, and as it appears to us to have been used by the older

writers, the true "traumatic or spreading gangrene" is a very rare condition, and one for which immediate amputation is indeed the only remedy; death is in these cases due either to septicæmia, to the direct implication of vital organs by the spread of the disease, or to these causes in combination; and the only though doubtless a faint hope of safety rests, we firmly believe, in promptly removing the source of systemic infection (provided that the patient's general condition admits of any operation whatever), and in substituting an amputation wound, made through as yet healthy parts, for the wound which, slight as it may seem, will, we know by experience, otherwise inevitably lead to a fatal issue. We confess that until we had ourselves witnessed this disease in its most terrible form, and had seen the appalling rapidity with which a strong man, struck by traumatic gangrene, becomes in a few hours a living corpse, we had never realized the value of Larrey's teachings, nor the imperative necessity for immediate surgical interference.

Mr. ROBERT JALLAND narrates several *Surgical Cases*, one of ligation of the common femoral artery for wound of its profunda branch; one of herniotomy, complicated by the existence of adhesions within the sac; and one of tracheotomy for the removal of a foreign body (a marble) which had lodged in the windpipe. The result in each case was favourable. With regard to ligation of the common femoral artery, while we are quite willing to believe that it is a better operation in cases of aneurism than would be inferred from the teachings of Erichsen and Porta, we cannot agree that it is a desirable mode of treatment in cases of primary hemorrhage from wound of one of its branches; we think that Mr. Jalland's operation placed his patient in much greater danger than could have resulted from any incision, however free, which might have been required to allow the application of ligatures to the injured vessel above and below the point from which the bleeding proceeded.

The next paper which demands our attention is contributed by Mr. J. F. NICHOLSON as a case of *Singular Injury of Cranium by a Marble*. The patient was a boy five years old, who fell down stairs while looking for a marble, and sustained a compound fracture of the skull. No very careful exploration of the wound appears to have been made at the time of the injury, nor for more than three weeks afterwards, when, symptoms of cerebral irritation having supervened, chloroform was administered, and a hard substance, which proved to be the missing marble, was extracted from beneath the scalp. Several sequestra were subsequently removed, exposing the membranes of the brain, and the patient eventually recovered, remaining in good health when last heard from, ten years afterwards.

Following Mr. Nicholson's paper, is an interesting communication by Mr. THOMAS SMITH, on *Tubercular Disease of the Urinary Mucous Membrane*. By this name Mr. Smith designates an affection which is often called strumous or scrofulous disease of the urinary mucous membrane, and which commences as a tuberculous infiltration of the submucous tissue in some part of the genito-urinary tract, and usually first in the kidney. At a later period the prostate, testicle, and even the body of the penis, may become involved. The following are the post-mortem appearances in chronic cases:—

"The internal surface of the urethra, bladder, and ureters is seen either in patches or universally covered with a yellowish deposit, in consistence like soft cheese or putty, often mixed with phosphatic grits; this deposit adheres closely to the mucous membrane, which latter, on examination, will be found roughened, eaten into, or here and there ulcerated through; the submucous tissue is thickened and stiff, and infiltrated with deposit.

"The ureters generally appear externally thick, hard, stiffened, and shortened;

internally, they may have here and there a deposit of tuberculous matter in their walls, or the whole substance of the wall may be full of deposit, either partially obstructing the canal, or, if ulceration has taken place, this latter may be much enlarged; the mucous surface may be plastered over with the putty-like deposit, and here and there ulcerated. . . .

"The kidneys, where the disease has made much progress, will be more or less excavated; the loss of substance having taken place from the cavity of the pelvis and calices towards the outside of the kidney; the same kind of deposit being smeared over the interior of the pelvis, the calices, and the ulcerated cavities in the glandular structure. So much of the latter as remained contained isolated deposits of tubercle, in one case that I have examined."

The symptoms of tuberculous disease of the urinary organs very closely resemble those of stone, the early symptoms corresponding with those of renal, and the latter with those of vesical calculus. Mr. Smith points out a resemblance which is certainly sufficiently striking, between the effects of tubercle in the urinary and in the pulmonary mucous membranes:—

"Among the most common indications of pulmonary tubercle are suppuration, hæmoptysis, an increased secretion of mucus, with the occasional recurrence of a spasmodic expulsive muscular effort (in the form of cough).

"In urinary tuberculosis there is also suppuration, hæmaturia, an increased secretion of mucus, with spasmodic expulsive contractions of the bladder."

With regard to treatment, Mr. Smith recommends the free use of opium or morphia to relieve pain, with astringent preparations of iron and the confection of black pepper to control the hæmaturia, and the administration of cod-liver oil and iron as general constitutional remedies.

We next come to a case of *Simultaneous Dislocation of both Femora; Reduction by Manipulation*; by WILLIAM POLLARD.—The left femur was dislocated upwards and backwards, on the dorsum ilii, and the right femur downwards and forwards, into the thyroid foramen; the patient was seen shortly after the accident, and, chloroform having been administered, no difficulty was experienced in effecting reduction of either dislocation by simple rotation of the limb, aided, in the case of the right thigh, by manual extension.

J. D. RENDLE, M.D., gives an account of a case of *Aneurism of both Popliteal Arteries treated successfully by pressure on the Femorals*.—This case is one of much historical interest, as being the first in which compression was successfully employed for popliteal aneurism in St. Bartholomew's, or indeed, as Dr. Rendle believes, in any London hospital. The patient was a young Irishman, and was treated in June, 1847, under the care of the late Mr. Stanley. Instrumental compression was employed, and the result appears to have been perfectly satisfactory. Mr. Stanley's remarks, as appended in his own handwriting to Dr. Rendle's notes of the case, are as follows:—

"The conclusion we may draw from the foregoing account—that the aneurism in the right ham was caused by compression of the femoral artery, continued without intermission from the middle of Saturday to the middle of the following Wednesday—four days. That the aneurism in the left ham was cured by compression of the femoral artery, not continued uninterruptedly for so long a period at once, but with intermissions, for shorter periods—first 39 hours, then 24 hours, again 24 hours, and lastly 48 hours; after which there was no recurrence of pulsation on removing the tourniquet."

We shall next invite attention to a paper which is continued from Vol. VI. of the "Reports" (see No. of this Journal for July, 1871, p. 218), and which is entitled *Clinical Remarks on Deformities*, by ALFRED WILLETT. The subject of Mr. Willett's present contribution is antero-posterior curvature, or, as he would prefer to call it, angular disease of the spine—the "Pott's disease" of

French writers. While we are disposed to agree with Mr. Willett in most of his remarks, we think that he undervalues the importance of constitutional remedies in this grave affection, and we decidedly dissent from his condemnation of that plan of treatment which enforces the maintenance of the recumbent posture, which indeed we consider almost essential in the acute stages of the disease. His assertion, that "children pine away much more rapidly under confinement than do adults," will, we venture to say, not be confirmed by those who have most experience in the surgery of childhood: it is, on the contrary, we believe, a matter of common observation, among those connected with hospitals especially designed for children, that these little patients bear long confinement to bed remarkably well. The mechanical apparatus employed by Mr. Willett is a modification of that recommended by Dr. Taylor, of New York, and acts by drawing the upper part of the spine backward (the lower part being fixed), and thus preventing the inflamed bone surfaces at the seat of deformity from coming in contact. For hospital patients, Mr. Willett recommends a cheap form of apparatus, devised by his colleague, Mr. Morratt Baker, in which the necessary force is obtained by using elastic steel bands, very much as in the ingenious knee-splint, described by Dr. Howe, of Philadelphia, in the number of this Journal for April, 1868 (page 358). Mr. Willett (judiciously, as we think) abstains from any effort to remove the deformity which may be present when he applies his apparatus, and contents himself with endeavouring to prevent the further progress of the disease.

Mr. W. MORRATT BAKER describes a *Case of Ligature of the Common Iliac Artery*. This case is one of much interest. The patient was a youth of seventeen, who had a large swelling, supposed to be an abscess, in the gluteal region; the swelling having been opened, a stream of arterial blood came forth, and exploration of the part soon showed that the source of the hemorrhage was within the cavity of the pelvis. The sciatic foramen was temporarily plugged, and the next day the common iliac artery was tied, hemorrhage still persisting, though it was now readily controlled by pressure. The patient died forty hours subsequently, with evidences of incipient gangrene. Post-mortem examination revealed extensive disease of the sacro-iliac joint of the affected side, and rendered it probable (though this could not be positively ascertained) that the source of the hemorrhage was an ulceration of one of the branches of the internal iliac artery.

We next come to a *Case of Fibroid Polypus of the Uterus, complicated with complete inversion, Reduction of the inverted Uterus*; by ALBERT F. FIELD. The treatment in this case, which is one of considerable interest, consisted in removing the fibroid growth, which protruded from the vulva, by means of an *écraseur*; and in subsequently restoring the inverted womb to its normal position by manual pressure, aided by multiple incisions of the cervix uteri and by the use of an air bag, to maintain constant pressure upon the displaced organ in the intervals between the manipulations. In concluding his paper Mr. Field refers to various cases in which reduction of the inverted uterus has been effected by similar means in the hands of other surgeons.

Mr. LUTHER HOLDEN describes *Two Cases of Popliteal Aneurism cured; one by Pressure; the other by Genuflexion, combined with Pressure*. Mr. Holden's first patient was a newspaper reporter, and traced the formation of his aneurism to having been obliged to sit in a cramped position, with his leg bent under him, for three hours daily during two months, while he was noting the proceedings in the "Tichborne case." The treatment consisted in (1) digital pressure, reinforced by laying a weight of twelve pounds over the fingers for 30 hours;

(2) digital pressure as before for $34\frac{1}{2}$ hours; (3) instrumental pressure, with a Signoroni's tourniquet for $16\frac{1}{2}$ hours; and (4) instrumental pressure for 35 hours. The whole course of treatment occupied nearly a month, convalescence having been slightly retarded by the formation of a slough at the point at which the pad of the tourniquet had been applied. In Mr. Holden's second case, forced flexion, in the manner recommended by Mr. Ernest Hart, was employed for two weeks, during the second of which it was supplemented by instrumental pressure in Scarpa's triangle, less extreme flexion being then maintained until the end of a month, and the patient being still kept in bed a fortnight longer, on account of synovial effusion in the knee, the result of the long-continued fixation of the joint.

Mr. HENRY POWER gives an account of *A Case of Optic Neuritis in which Wecker's operation was performed: and some selected cases*. "Wecker's operation," which consists in slitting the sheath of the optic nerve, is thus described:—

"Having made an opening in the conjunctiva a little behind and below the insertion of the tendon of the external rectus, the eye was turned inwards as far as possible, and the guarded knife (Wecker's) passed behind the eyeball; there was but little trouble in finding the nerve, as directly that was touched it caused the eyeball to rotate; the sheath was then slit up for the distance of a line. The conjunctiva was then united with three silk sutures. These were allowed to remain for three days and then removed, at the end of which time the wound was quite healed; there was perception of light in the right eye on the third day after the operation [the eye was previously quite blind], and great diminution of the pain in the head. The ophthalmoscopic appearances were the same except that the retinal vessels were less congested than previously to the operation."

Mr. Power's "selected cases," which are all interesting, include several of injury to the eye, and one of acute choroiditis with hypopyon, requiring iridectomy, and, ultimately, excision of the globe.

Following Mr. Power's cases is a *Note on the Death-Rates after Amputations in Hospital Practice*; by GEORGE W. CALLENDER, F.R.S. This is meant as a supplement to a paper contributed by the same author to the fifth volume of the "Reports" (see No. of this Journal for Jan. 1870, p. 196), and may be regarded as a last word on the subject of hospitalism; Mr. Callender here tabulates twenty-five consecutive cases (all successful) of amputation, which have been under his or Sir James Paget's care since May, 1869, and adds:—

"If amputation statistics are to be relied upon, no stronger evidence could be given of the healthy condition of the hospital wards during the three years to which the above figures relate."

The last of the surgical papers is a *Case of Popliteal Aneurism, for which the femoral artery was tied with carbolized catgut. Subsequent death from hemorrhage*; by LUTHER HOLDEN. This case is one of much interest and importance, in view of the claims which have recently been advanced on behalf of carbolized catgut as a safer material for ligatures than silk. Pulsation in the aneurismal sac recurred the day after the operation, and fatal bleeding from the point of ligation took place on the night of the eighth day. At the post-mortem examination no clot was found in either the proximal or the distal portion of the artery, and the ligature itself had entirely disappeared. The candour and accuracy with which the details of this important case have been made public, are, in our opinion, highly honourable to Mr. Holden.

The present volume of the "Reports" terminates with the customary lists of officers and members of St. Bartholomew's Hospital and College, followed

by an Index, and (in the form of an Appendix) by *Statistical Tables of the Patients under Treatment*, during 1871, compiled by the medical registrar, W. AINSLIE HOLLIS, M.D., and the surgical registrars, J. ASTLEY BLOXAM, F.R.C.S. and H. SYMONS, M.R.C.S. These tables are as usual very elaborate and valuable, the medical report occupying over twenty, and the surgical report over sixty pages. The latter contains sub-tables, giving details of cases of fracture and dislocation, the causes of death in all cases which proved fatal, details of surgical operations, etc. From the last we learn that seven cases of amputation terminated unfavourably during the year, so that it would appear that Mr. Callender's colleagues are not all as successful as himself.

We are glad to notice that almost all of the surgeons who are actively engaged in hospital practice at St. Bartholomew's, have contributed to the present volume of Reports, but regret to observe, on the other hand, that but three of the eleven physicians have done likewise; still the volume, as a whole, probably represents pretty fairly the work of the hospital, and that it is a volume of considerable interest our readers can readily see from the abstracts which we have given of the various papers. There is, however, one criticism to which it is, we think, fairly open, and this is that it contains too many scraps and detached cases. We must be allowed to express a hope that future volumes will contain more of those exhaustive papers, founded on long series of cases, which hospitals alone can furnish, such as have always formed a prominent feature in the Guy's Reports, and indeed such as adorned some of the earlier volumes issued by St. Bartholomew's itself. J. A., Jr.

ART. XXI.—*Transactions of the Obstetrical Society of London*. Vol. XIV. For the year 1872. 8vo. pp. 387. London: Longmans, Green, & Co., 1873.

THIS volume records the proceedings of ten meetings of the Society, and embraces a list of twenty-six monographs presented by its fellows.

On the Treatment of Empyema in Children, by means of Subaqueous Continuous Drainage, by W. S. PLAYFAIR, M.D. This paper is chiefly valuable, as an evidence of the utility of establishing a continuous drain upon the collection of pus in the pleural cavity, so arranged as to prevent the entrance of air, without interfering with the exit of the purulent fluid: and contrasts the results with those obtained by the "aspirateur," which can only be used interruptedly. The following is the author's method.

"All that is required, is about six inches of the ordinary fine drainage tubing, and about six feet of ordinary caoutchouc tubing. These are attached to each other by about an inch of glass tubing, over each end of which one extremity of the tube is passed. The free extremity of the drainage tube lies within the cavity of the pleura; that of the India-rubber tube passes through a perforated cork into a bottle half filled with water." [An engraving represents the apparatus as composed of a short vulcanized tube, long black-rubber tube, and a salt-mouthed, flat-bottomed pint bottle, graduated in ounces, to measure the amount of discharge.] "The mode of using the apparatus is as follows: In a case of suspected empyema, a puncture is first made with an exploring needle, to determine the fact of the contained fluid being purulent. For this purpose nothing is better than the ordinary syringe for subcutaneous injection, which resembles a pneumatic aspirator in miniature. Should it prove to be so, a trocar is passed in, the canula of which is of sufficient size to admit of the passage of the drainage tube. As soon as there is a free flow of pus, this is passed into

the pleural cavity through the canula, which is then drawn over it. An assistant now pinches the tubing close to its entrance into the chest, to stop the flow of pus through it, until the other end of the drainage tube is attached to the small piece of glass tubing. The pus is now allowed to flow into the bottle of water, and the drainage tube is attached to the chest by passing round it a loop of fine wire, which is fixed by strapping. The tube remains permanently in the pleural cavity, and any pus that is formed, drains away at once. . . . The tubing did not seem to incommode the little patients in the least, who moved about in bed, played, sat up, and turned from side to side, without the least difficulty, and without even disarranging the apparatus."

CASE 1.—"Girl, aged 6, heart displaced from effusion in left pleural cavity. Dyspnœa urgent; ordinary paracentesis resorted to, with discharge of about a pint and a half of pus. Pleura refilled in eleven days, and dyspnœa worse than before; threatening to discharge spontaneously under left clavicle. Operation by subaqueous drainage adopted, and performed, with the exit of nearly a quart of pus. Next day much improved, and swelling under clavicle disappeared. For a few days about three ounces of pus were discharged daily, and for some days more, about an ounce. No bad symptoms at any time. Apparatus removed on 22d day, and wound soon afterwards closed. Lung expanded completely, and there was no subsequent deformity beyond a little flattening under left clavicle.

CASE 2.—"Boy, 4 years old, operation with similar result—tube removed in 13 days—treatment by Dr. Hilton Fagge.

CASE 3.—"Under same care. Boy, 3½. A pint of pus discharged at the operation, and about twenty-five ounces more by the next day. Tube removed in seven days, no pus having been discharged for some time. Termination very favourable, 'with good breathing over the whole of the left side,' in two weeks.

"In contrast with this, Dr. Playfair presents the following cases reported by Dr. Bouchut, in the *Gazette des Hôpitaux*, as the results of the treatment by the 'aspirateur.'"

CASE 1.—"Boy, 10, extensive empyema—operations commenced February 18th, and repeated at the end of first and second weeks; three times in May—nine, in June—in July, every third day; discharged cured on August 20th, with considerable chest deformity, after thirty-three operations.

CASE 2.—"Boy, 8. After six operations a hydro-pneumo-thorax formed. After nine months of treatment the child is still uncured, and is now tapped twice a week, and has some pus drawn off.

CASE 3.—"Boy, 7, extensive effusion, chest filled up in two days after use of aspirateur; at second trial, tube became blocked up, and had to be removed and replaced several times. Bouchut intended to make a long free incision into one of the intercostal spaces on the next day, but child died during the night. His opinion was, that the lung was bound down by adhesions, which prevented its expanding to drive out the pus."

Dr. Fagge recommended that the tubing should be of the same size as the canula, and introduced upon its withdrawal, instead of through it, so that the tube may be made to fit tightly in the opening through the chest-wall. He, and Mr. Taylor, reported each an additional case, with favourable results.

On the Probable Origin of Certain Forms of Cystic Diseases of the Ovary.
—ALFRED MEADOWS, M.D., presented the following case: "Single woman, aged 29, cyst removed, unilocular, thin, and non-adherent; contained one and a half gallons of fluid; removed by tapping, and drawing out through an incision of three inches; pedicle tied and returned. Patient made a rapid and complete recovery. Tumour found to be formed 'as it were, at the root of the ovary . . . developed at its attached border, the rest of the ovary, including the whole of its free surface, being perfectly independent of the one cyst.' The ovary, with several Graafian follicles on its surface, was found on one side of the cyst, and almost independent of it, the latter being, as it were, developed in the folds of the broad ligament at the root, or attachment of the ovary. The Fallopian tube appeared to encircle the tumour for at least the half of its

extent, and a wire could readily be passed from its fimbriated extremity around to its cut end. The fimbriæ could also be traced in an exceedingly stretched and attenuated form over the cyst from the end of the tube nearly up to the ovary itself, fibres being spread in all directions, but with a general direction towards the ovary."

Dr. Meadows advanced the opinion, that in this case the tumour was formed from a Graafian follicle, which, instead of making its way from the centre to the free surface of the ovary, to be grasped by the fimbriæ of the Fallopian tube, had taken a contrary direction toward the attached border of the organ, whence not being able to escape, it had gone on developing, by reason of the formative power inherent in it, thus giving rise to a serious structural lesion in the ovary itself. In proof of this, it was also noted, that the cyst was lined with an epithelial layer similar to that found in the Graafian follicles or cavities, which are indicated on the surface of the ovary.

Case of Vaginal Thrombus, by ROBERT JALLAND, M. R. C. S.—Primipara, 20, unmarried, twin pregnancy, in labour ten hours, pains feeble, first child delivered by forceps, second came unassisted by the breach; thrombus of posterior vaginal wall as large as a fist now discovered; this burst, with profuse hemorrhage, leaving a laceration two inches and a half long; all other means failing, the hemorrhage was finally controlled by digital compression kept up for more than half an hour, and the patient made a good recovery.

The points of interest are: 1. "The moderate size of the varicose tumour, and the absence of further enlargement during the progress of labour." 2. "That it offered no hindrance to the expulsion of the child." 3. "That there was no apparent increase in its size until the placenta were expelled." 4. The rapid enlargement, and rupture which ensued upon the contraction of the uterus, and the sudden influx of blood into the vaginal plexus of veins.

"*On Retroflexion of the Uterus as a frequent cause of Abortion.*"—J. J. PHILLIPS, M.D., remarks, that numerous observations had convinced him that the chief cause of frequent abortion, was a displacement of the uterus backward.

"It is not very uncommon to notice the ascent above the pelvic brim about the third or fourth month of a previously retroflected uterus, especially when certain precautions are observed by the patient, and indeed occasionally under conditions apparently most unfavourable for its restitution. Nevertheless, making due allowance for cases terminating thus favourably, retroflexion of the uterus appears to be so efficient a predisposing cause of abortion that it should occupy a leading position in an enumeration of the local disorders tending to the production of this accident.

"A not unimportant factor in the production of abortion may be found in the interference with the uterine circulation in some cases of marked retroflexion, tending to the effusion of blood between the uterus and the placenta, and this in its turn exciting uterine action, or leading to the death of the ovum."

CASE 1.—"Age 30, six abortions between end of second and end of third month, in three years; uterus found retroflected; Hodge's pessary employed: woman became again pregnant; pessary worn until end of sixth month; patient delivered at full term.

CASE 2.—"Age 35, mother of 6 children at term; aborted twice in one year, tenth week; uterus larger than natural and retroflected; treatment and result as in the former instance."

Where pregnancy has occurred before the commencement of treatment, the author recommends the resort to a horizontal position either upon the face or side, and attention to the bladder and rectum.

The presentation of this paper gave rise to a very long discussion, the general opinion being in concurrence with the views of the author, both as to cause and treatment.

Placenta Prævia without Hemorrhage at the time of Delivery.—Dr. JOHN BASSETT relates the following case: Mrs. P., mother of several children, attacked with uterine hemorrhage April 4th, 1871, and again on 13th; delivered on May 28th, after a labour of eight hours, with merely a draining of blood. Placenta oval, with smaller end over os, the covering portion having become whitish, dense, consolidated, and nearly bloodless. Child living, a male, of full size, but very thin.

Fibro-Cystic Disease of Uterus and Ovaries. Extirpation, recovery, by THOMAS BRYANT, M.R.C.S.—Subject of operation single, aged 26, and believed, prior to the opening of the abdominal cavity, to be afflicted with an ovarian cyst simply. No adhesions; ovaries as large as walnuts; whole diseased structure removed, broad ligaments being secured separately, and uterus ligatured in halves at its neck. Whole mass weighed $8\frac{1}{2}$ pounds; cervix clamped after being ligatured, as an additional security. No bad symptoms, clamp off on fourteenth day, wound healed in three weeks, and patient about in a month.

Similar errors in diagnosis have so frequently been made, that it is believed impossible, even with every precaution, always to avoid them. It is seldom, however, that extirpation of the uterus is attended with such favourable results. Dr. W. F. Atlee, of this city, has reported a nearly similar case, in which the diagnosis was in error, the uterus extirpated, and the recovery safe and rapid.

On the Treatment of certain forms of Menorrhagia and Uterine Hemorrhage by means of the Sponge Tent, with special reference to their Occurrence in Women residing in Tropical Climates, by GEORGE GRANVILLE BENTOCK, M.D.—This monograph is intended to show the value of the sponge tent, in the treatment of menorrhagia, the result of chronic hyperæmia, after the usual remedies employed have failed; and three typical cases are reported, all in women having borne children, two of whom had resided in India. The author makes his tents of a sponge of medium texture, and without mucilage, first moistening it with a watery solution of carbolic acid, one in twenty, and finishing with a coating of one part wax to three of lard, covering not more than one half of the tent. He thus describes the condition for which he recommends the use of this form of treatment.

"The condition is one of relaxation of the tissues of the uterine body to some extent, but especially of the mucous membrane lining the cervical canal, and probably that of the uterine cavity, if I may be allowed to adhere to the established nomenclature for the sake of convenience, without prejudice to the question whether it be a distinct membrane or a layer of soft tissue. This state of relaxation permits congestion or stasis of blood to take place in the vessels of the submucous tissue (or layer of soft tissue), which, deprived of their necessary support, readily pour out their contents either under the influence of the menstrual molimen, or any influence acting locally or generally, and leading to congestion of the pelvic organs in their entirety, as occurs in the somewhat analogous case of hæmorrhoids."

"As a rule there is decided leucorrhœa, but I have never seen the os and cervical canal blocked up with glairy mucus, so characteristic of the so-called *catarrh* and inflammatory conditions of the uterus. Nor is there any increase of temperature.

"The mode of action of the sponge-tent is probably mechanical as well as vital. It acts mechanically by compressing the mucous membrane and its vascular system, emptying the over-distended vessels, and removing the redundant epithelium; vitally, in restoring tone to the flabby bloodvessels by relief of over-distension, and in exciting growth of healthy tissue. Simple compression by the tangle-tent is not sufficient for these purposes; the tent attains its maximum dilatation in a few hours, and on its withdrawal the granulations spring up again by mere force of elasticity. It is well known that the tangle-tent produces less irritation than the sponge, but this is its disadvantage. In

the case of the sponge-tent the pressure is exerted more slowly, more gently, more continuously, and more efficiently; the interstices of the sponge become interlocked with the inequalities of surface presented to it; pressure is exerted on the bases of, and between the granulations, as well as on their summits, and thus their complete destruction is brought about."

Dr. Aveling remarked that "he had found arsenic to be of the greatest service in the treatment of this hyperæmic condition of the uterus, and would recommend its trial before having recourse to tents, the use of which he and others had known to be followed by a fatal result."

Inversion of the Uterus after Childbirth, in a Primipara, treated by Amputation, by J. HALL DAVIS, M.D.—Woman married, 22; came under observation ten months after delivery, when greatly exhausted by uterine hemorrhage, and too much prostrated to endure replacement of the organ by persistent elastic pressure. In consequence of this belief, the uterus was cut off by the *écraseur*, its fundus and the upper two-thirds of its body being removed. Severe pains and great prostration followed, but the woman ultimately made a good recovery, being discharged on the thirty-second day. The peritoneal cavity was not opened at the point of excision.

On the Essential Cause of Dysmenorrhœa, as illustrated by Cases of Partial and Complete Retention.—Dr. ROBERT BARNES proposes in this paper to search for the essential condition of dysmenorrhœa by the study of the various circumstances under which this symptom may arise. The analysis of these various circumstances may enable us to discover one condition which all or many have in common; that one condition will be the essential cause.

"I think observation warrants this general conclusion. The healthy well-formed uterus is rarely an '*irritable uterus*,' or associated with dysmenorrhœa. Or the case may be stated as follows: For menstruation to occur healthily and easily, the genital canal, from its commencement at the fimbriated extremity of the Fallopian tubes to the vulva, must be freely pervious. In the course of this canal there are three natural constrictions, namely, at the os uterinum of the Fallopian tube on either side, at the os internum uteri, and at the os externum uteri. It is at these points, especially, that difficulty is apt to arise. But if extreme narrowing occur at any other part of the canal, as in the vagina, similar results will follow. If the closure be complete, and menstruation takes place, of course there will be retention. If the closure be incomplete there will be partial retention, the expression of which is dysmenorrhœa." . . . "We shall find in this study, endless illustrations of the proposition that one essential condition of dysmenorrhœa is *retention of menstrual secretion*."

Whether the blood be retained in the cavity of the uterus after secretion, or in the tissues of the organ, producing distension of its bloodvessels before secretion, and consequent painful sensations in each instance, the cause is the same, there is a difficult excretion.

The first case given as an example (being one of vaginal occlusion), in our opinion, can scarcely be regarded as one of *dysmenorrhœa*, under the accepted meaning of this term.

"Another cause of dysmenorrhœa, and of hemorrhage, is the fixing of the uterus by perimetrial deposits, coming on after labour or abortion, or other conditions. The fixing of the uterus, although commonly attended by patency of the cervix, seems to me to cause dysmenorrhœa, by preventing the uterus from contracting, and also by favouring engorgement of its tissues."

Fibroid tumours; the exfoliated membrane in dysmenorrhœa membranacea; extrusion of clots, or of blood thickened by catarrhal mucus, are among the causes enumerated as giving rise to painful menstruation.

"We meet with cases every now and then in which the dysmenorrhœal symptoms are very severe, although there is no obvious stenosis. In some of these I have found the uterus small, perhaps inclined to one side, set in a short non-

distensible vagina; sometimes the os externum is preternaturally small, but even after freely dilating this the dysmenorrhœa persists."

These cases are attributed to imperfect development, and a highly nervous temperament, acutely sensitive to pain.

We regard the discussion upon Dr. Barnes's paper as of more value than the monograph itself, and regret that we cannot give it in full. Dr. Playfair regretted that Dr. Barnes's idea with regard to the unity of origin in dysmenorrhœa could not be sustained by clinical facts. He believed in the mechanical theory as applied to a large number of cases, "but besides these, he was inclined to think that there are a far larger number of cases than Dr. Barnes allowed, where nothing of the kind can be found." He instanced the case of congestive dysmenorrhœa, and denied that there was any menstrual retention in the ordinary sense, remarking that "there is all the difference in the world between pain which results from the efforts of the uterus to expel what is practically a foreign body in its cavity, and pain which results from the presence of an undue amount of blood in the vessels of the organ." Pain of this latter class he attributes to tension, as in a gum-boil, or other swelling, relieved by loss of blood. He attributes the cause of dysmenorrhœa in such cases to some local condition of the uterus giving rise to congestion; and remarks that the cervical canal is in many instances found morbidly patulous, instead of constricted. He refers also to a class of non-uterine cases, in which the seat of trouble appears to be in the ovary, and connected with the changes it undergoes during menstruation.

Dr. Snow Beck also remarked upon the paper at considerable length, holding views in correspondence with those of Dr. Playfair; and so also did Drs. Rogers and Felt. Mr. Spencer Wells believed that a large proportion of cases was mechanical, and could be cured by removal of the obstruction.

Cæsarean Section in 1866; Subsequent Pregnancy and Delivery per vias Naturales; Recovery, by WILLIAM NEWMAN, M.D.—We notice this report on account of its rarity, the operation in question being seldom performed upon subjects capable of natural delivery. The cause for the operation arose from the condition of the uterus, which was indurated and contracted in its cervix, being apparently the seat of epithelial disease. Five years subsequently the woman was delivered by the forceps, after a labour of two days' duration, delay being occasioned by the cicatricial condition of the os uteri.

Dr. Barnes doubted the correctness of the diagnosis, that the case was one of malignant disease. Dr. Playfair held the same view, and related a case of Cæsarean section operated upon because of the pelvis being blocked up with exudation, probably from pelvic cellulitis. Dr. Rogers took the view of Dr. Newman, and reported a case in which delivery was accomplished after seventy-two hours of labour through a thick, rigid cervix.

The Anatomy of the Human Placenta, by J. BRAXTON HICKS, M.D.—This is an old subject, treated *de novo* by a master hand, who, not satisfied with the investigations of Hunter, Reid, Goodsir, Priestley, Van der Kolk, and others, has chosen (aided by the advantages afforded him for histological research over many of his predecessors) to examine for himself, and confirm or reject their conclusions, according as he should find them correct or incorrect. In a letter to the reviewer, written a month before he presented this monograph, he says: "I am about to bring out a paper on the Anatomy of the Placenta, which may produce some impression, were it not that our folk are very wedded to Hunter's sinus system." We hope that no such previously formed opinion will in the least interfere with a proper investigation of the claims presented

so fully and fairly by Dr. Hicks, which must be examined in the original article to be properly appreciated, as we cannot possibly do justice to so elaborate a paper, in the short space allotted to us. The aims of the author are expressed as follows:—

“I shall endeavour to describe the anatomy of the placenta, discussing, at the same time, the probabilities of a sinus system, and in doing so I shall: 1st. Criticise the arguments used in favour of a sinus system. 2d. Endeavour to show that if a sinus system exists, there is no period of a transitional state. 3d. That from dissections, early or late, in pregnancy there is no evidence of the existence of such a system. (a) That there is no blood normally in the intervillal space; (b) That no openings from bloodvessels into that space exist; (c) That the *curling artery* expands itself by its ramification into the decidua of each lobule. 4th. Describe the anatomy of the placenta and its growth, as shown by dissection. 5th. Advance arguments against the sinus system, drawn from pathological conditions.”

A careful examination of this paper has satisfied us that Dr. Hicks has thoroughly investigated the question of the vascular character of the placenta, and its relations to the uterus and maternal vessels, in order to determine the manner in which the osmotic nutrition of the fetus is effected, and has established the points claimed in the extract just given. There is nothing specially new in the views of Dr. Hicks, as they have been advanced by a number of English and Continental writers; but the thoroughness of the anatomical investigations by which he has established his opinions, and confirmed the views of those who opposed the sinus system of Hunter, entitles him to the gratitude of his medical brethren, for having given the *coup de grace* to a long-vexed question.

Short Account of the Cases of Three Sisters in whom the Uterus and Ovaries were Absent, by Dr. CHARLES E. SQUAREY.—In all three subjects the vagina was short, and ended in a cul de sac; the mammæ were developed; and the marks of puberty generally existed, except that they had not menstruated. Their ages were 16, 18, and 26 years. No trace of uterus or ovaries could be felt. Dr. Phillips reported the cases of two sisters. Dr. Rogers had examined three similarly affected subjects. The general opinion prevailed that the ovaries existed in all such cases (although they could not be felt), as there were the marks of womanhood in the general tastes and feelings of the cases, contour of body, and sexual desires. Many instances are upon record of this peculiar malformation affecting two or more members of the same family, as there are also of other sexual deformities, such as hypospadias, etc.

Long Delay of Labour after discharge of the Liquor Amnii, by J. MATTHEWS DUNCAN, M.D.—M. S., æt. 22—third pregnancy—conception presumed to have taken place near the end of October. On March 10th a copious discharge of liquor amnii took place, with slight irregular pains. The fluid continued to discharge freely, but not constantly, until, at the end of a fortnight, the uterus was as hard to the touch as a fibroid tumour. Regular pains came on April 25th, child delivered alive, and by the breech, but lived a very short time. It had the characters of a six months' fetus, and weighed an ounce less than two pounds. The position, limbs, and features of the child, especially the ears, showed signs of compression. The placenta was natural; there was no gush, and little discharge of liquor amnii; the membranes were natural, and were ruptured at the anti-placental pole of the ovum.

Query: Why did the woman not miscarry until the expiration of forty-five days; or the fetus die, in a uterus so contracted?

“The survival of the fetus,” in this case, “is certainly very remarkable, and it would, no doubt, have been impossible, if the uterus had been firmly and actively contracted. Firm tonic muscular action of the uterus after discharge of

the liquor amnii would, no doubt, soon destroy fœtal life, and it would also lead, without much delay, to evacuation of all the uterine contents. That this was not firmly and actively contracted is proved by the absence of labour and the continuance of fœtal life."

Dr. Barnes accounted for the absence of labour after rupture of the membranes at an early stage of gestation, in the instances where it did not occur, by the hypothesis that the

"Nervous centres had not yet attained that remarkable irritability which characterized them at the full term. There was less ready response to excitatory stimulus. Hence, when the uterus settled down upon the fœtus, the contact failed to excite, in the non-irritable nervous centres, active reflex contractions, as it almost surely would do at term. The necessary irritability seemed to be acquired in women in whom labour was habitually induced prematurely."

A Case of Uterine Fibroids complicating Labour, by HENRY M. MADGE, M.D.—Primipara, æt. 40; spare, but healthy; examined when pregnant five months; and eight uterine fibroids, varying in size from a walnut to a large orange, three of them being pedunculated, were detected. Labour very slow and tedious; forceps used; subsequent contraction and involution tardy. At the end of three months, uterus still enlarged, and all tumours could be felt. In six months three had disappeared, and four were reduced about one-half. In sixteen months, largest tumour not much reduced; two still easily felt, and but traces of the remainder.

This case is chiefly valuable for its positive evidence of the power of spontaneous reduction and absorption of fibrous tumours of the uterus.

On Post-mortem Parturition, with reference to 44 Cases, by J. H. AVELING, M.D.—This is a record of cases which belong to the curiosities of medical experience; many of them, especially the more ancient, savouring very much of the fabulous, particularly as to the duration of the life of the fœtus in utero, after the decease of the mother. That a fœtus may be expelled with its secundines, some hours after death from labour, and generally by gaseous force, cannot be questioned; but that such children are ever born alive may well be doubted, particularly when there is abundant evidence to prove that the fœtus, only in very rare instances, survives even as long as half an hour. The late Prof. Chapman, of this city, once attended a lady who died in labour, in whose abdomen there were evidences of fœtal life for half an hour after death. He was very anxious to open the woman and deliver the child, but the husband and family opposed the resort to the knife upon her. In cases of very sudden death, as from apoplexy during labour, occurring in the height of summer, rapid decomposition may, by gaseous evolution, force the fœtus from the uterus at a comparatively early period, but scarcely so early as to make it at all probable that in any instance the child should still be alive. We cannot endorse Dr. Aveling's sixth conclusion, page 255, viz., that "after the death of its mother, a child may continue to live in the uterus for many hours," unless we have better authority for it than any he has given us. This appears by the discussion of the paper to have been the opinion prevalent at the meeting at which it was presented. The history of post-mortem Cæsarean operations sustains us in our opinion.

Case of Pelvic Hæmatoma, or Retro-uterine Hæmatocele, with Remarks, especially as to the source of the Hemorrhage, by T. SNOW BECK, M.D.—Woman aged 40, married several years, but never pregnant, catamenia profuse; seized with severe pain in lower part of abdomen during menstrual period, with profuse discharge of blood accompanied with large clots. Face pale, skin cool, pulse 80, soft, regular; oval lump in hypogastrium, firmly pressed against walls of abdomen; dulness on percussion over whole pelvic region. Orifice of uterus

found high up against the pubes, and body in contact with abdominal walls; a soft elastic swelling bulging forward the posterior wall of vagina in the recto-vaginal pouch; no tenderness during examination. Menstruation nearly ceased in five days after attack of pain; no indications of inflammatory action. On eighth day sudden discharge of dark fluid blood and clots from rectum, and again next day, in defecation; after which gradual recovery took place.

Where did the effused blood come from, and into what part was it effused? In the opinion of Dr. Beck, it arose from the rupture of a varicose vein, and occupied the loose cellular tissue in the broad ligament, and immediately surrounding the middle and lower part of the uterus.

"The effused blood is said to come from various sources, but practically it comes from only three . . . 1, rupture of an ovary which has previously undergone some process of degeneration, and been partially converted into soft, dark-red tissue, capable of pouring out a considerable amount of blood; 2, rupture of a Fallopian tube, or an escape of blood from the congested vessels of the part without any apparent lesion of their coats . . . 3, rupture of some varicose vein.

"It is more than probable that one of the pelvic veins gave way in the case recorded, considering the great amount of congestion which was present at the lower part of the rectum, and the pain deep in the left iliac region, which for some months had increased after each catamenial period, was very severe, immediately preceding the extravasation, and suddenly ceased when it took place."

Dr. Beck does not hold to the opinion of Sir James Simpson, Drs. Meadows, Barnes, and others, that blood may regurgitate during menstruation from the uterine cavity, along the Fallopian tubes, and escape into the peritoneal cavity, provided the fluid be excessive, and meet with some impediment to its free discharge. He takes up and discusses the cases reported by Dr. Barnes in the St. Thomas's Hospital Reports, in proof of the correctness of his position, and does not see in them anything to warrant the opinion of "*reflux along the Fallopian tubes*," . . . except in those cases where there has been permanent obstruction to the outward flow of the menstrual secretion and consequent great distension with enlargement of the uterine cavities.

Considerable discussion followed the reading of Dr. Beck's paper, showing great differences of opinion upon the points at issue, and the obscurity of diagnosis in pelvic affections, where there are collections of blood, serum, or pus; or where the enlargement is due to other causes.

Statistics of Stillbirths, by FRED. W. LOWNDES, M.R.C.S.—We refer to this valuable paper only, as from its tabular nature we cannot give a condensed abstract of it: suffice it to say, that continental statistics show a general average of rather less than 5 per cent., and that the percentage is lowest where the number of forceps cases is the highest. Dr. Playfair referred to the success of Dr. Hamilton, of Falkirk, who had not a case of stillbirth in 731 consecutive labours; his practice being to apply the forceps in one out of every seven or eight cases, and not to permit any unnecessary prolongation of the second stage.

Remarks on the Treatment of some Forms of Extra-uterine Gestation, by ALFRED MEADOWS, M.D.

The mode of dealing with the Placenta, where Gastrotomy is performed, in order to remove the Fœtus in Extra-uterine Gestation, by ROBERT BARNES, M.D.

We associate these two articles together, as the appearance of the first caused the preparation and presentation of the second. Dr. Meadows presented the history of a case of a woman aged 23, on whom gastrotomy was performed, when suffering apparently from labour pains; and a fœtus of the size of seven

months removed. Whilst the placenta was being taken away, the hemorrhage was such as nearly to cost the patient her life; but it ceased as soon as complete detachment was effected. The cyst was next partially removed, a large part remaining on account of firm adhesions; and the wound was closed. The woman died of exhaustion in five hours, and the child on the next day.

In commenting upon this case and its result, Dr. Meadows recommends that in such operations the placenta should be allowed to remain, and the cyst left undisturbed, in order to avoid hemorrhage, which was the cause of death; and leave them to future atrophy and absorption.

Dr. Barnes remarked that this mode of practice had been settled by experience, and had the sanction of Ramsbotham. Dr. Protheroe Smith recommended to reduce the tension of the cyst by the aspirateur. Dr. Madge favoured the non-removal of the placenta. Dr. Edis recommended the operation, where practical, per vaginam.

Referring to the above remark of his, Dr. Barnes, at the succeeding meeting, presented his views at length, and stated, that

"1st. A perusal and comparison of the recorded cases of gastrotomy in extra-uterine gestation could not fail to convince the reader that the attempt to remove the placenta had proved disastrous, whilst leaving it alone had been followed by fair success."

"2d. Most of the recent operators . . . had taken care not to touch the placenta. This was certainly so in the case operated upon by Mr. Adams under Dr. Ramsbotham's advice. . . . He emphatically insisted that the placenta should not be touched, and the patient's recovery shows the wisdom of his advice."

3d. Mr. Adams, in reporting his operation, remarks: The placenta "ought to be examined by very gentle traction of the funis to see if it is loose and can be removed with facility, otherwise it is better to leave it alone, with the hope that it will be separated, and come away in the discharges."

4th. Mr. Hutchinson, in his collection of gastrotomy cases, discusses the question of operating whilst the foetus is living, and recommends a postponement until after its death. He remarks:—

"The lesson of facts is very strongly in favour of the precepts laid down by Dr. Ramsbotham in Mr. Adams's recent case, not to remove the placenta unless the latter structure be found quite loose."

Hohl, an important German authority, recommends a similar procedure; and so also does Dr. Keller, in relating two cases operated upon by Koeberlé, of Strasbourg, both of which were successful, the placenta having been left designedly *in situ*.

On the Systematic Examination of the Abdomen, with a view to Rectifying Malpositions of the Fœtus, in Cases of Labour.—Dr. ARTHUR W. EDIS proposes to examine the abdomen of every woman, early in labour, to determine the position of the foetus, and if this should be found unfavourable, to rectify it by external manipulation, making pressure according to the exigencies of the case; and only between the pains, if active labour shall have been commenced. He quotes a number of writers upon the subject, and especially from W. L. Richardson, "External Manipulation in Obstetric Practice," Boston, 1871, whose list of advantages may be stated as follows:—

1st. Diagnosis of fetal position before labour, or rupture of membranes.

2d. Examination made more readily and with less discomfort to woman than by the vagina.

3d. Change of unnatural into natural presentation prior to labour.

4th. Version during labour with less danger to mother and child than by the internal method.

- 5th. Cephalic version as readily effected as either podalic or pelvic.
 - 6th. Greater facility in preparation for delivery in placenta prævia.
 - 7th. Hastening of delivery in case of prolapsed funis.
 - 8th. Earlier interference and delivery in cases of accidental hemorrhage, or convulsions.
- R. P. H.
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ART. XXII.—*American State Medical Societies.*

1. *Transactions of the Medical Society of the State of California during the years 1871 and 1872.* 8vo. pp. 228.
2. *Transactions of the Annual Session of the Medical Society of Virginia, November, 1872.* 8vo. pp. 178.
3. *Transactions of the Medical Society of the State of West Virginia, at its Annual Meeting, June, 1872.* 8vo. pp. 106.
4. *Proceedings of the Annual Session of the State Medical Association of Arkansas, January, 1873.* 8vo. pp. 60.
5. *Transactions of the Wisconsin State Medical Society for the year 1872.* 8vo. pp. 170.
6. *Medical Communications, with the Proceedings of the Annual Convention of the Connecticut Medical Society, May, 1872.* 8vo. pp. 178.
7. *Transactions of the Colorado Territorial Medical Society, at its Annual Meeting, September, 1872.* 8vo. pp. 35.

1. THE ANNUAL SESSION of the *State Medical Society of California* was inaugurated by an address from Dr. H. GIBBONS, of San Francisco, in which the author discusses the improvement in the condition, character, and ethical demeanor wrought in the medical profession of California by a well-devised organization of its members.

The first strictly scientific paper is a very judicious report by Dr. A. B. NIXON, on the treatment of bruised and lacerated wounds, and on the management of fractures of femur by counter-extension and continued extension upon an inclined plane—a plan well known to our leading surgical authorities.

An interesting and instructive paper on *Climatology* and *Epidemics*, is from the pen of Dr. F. W. HATCH. Though based mainly on local data, it may be studied with profit by physicians of nearly all locations.

Amblyopia Potatorum is treated of by Dr. E. M. CURTIS. Some six cases are related from the phenomena of which Dr. C. is inclined to refer the amblyopia of drunkards to congestion of one or both ophthalmic papillæ, or even atrophy of the optic nerves. "It might be urged," says Dr. C., "that the remote cause of defective vision in the cases recorded, was as much the abuse of tobacco as of alcoholic liquors, as nearly all the patients were great smokers until the eyes became affected. While not disputing the fact that the abuse of tobacco may have had some influence in inducing the amblyopia in some of the cases, yet in a carefully tabulated series of cases of tobacco amaurosis which we owe to the Royal Ophthalmic Hospital of London, we find that nearly all of the patients had used alcoholic beverages, quite a number to excess, yet the four of Dr. C.'s patients who recovered continued to smoke, while all of them gave up entirely the use of intoxicating drinks.

In a supplementary report from the Committee on Obstetrics, Dr. F. W. TORD makes the following important statement: "As far as my observation extends, our State (California) is remarkably free from the terrible diseases

which attend the puerperal state in European countries." In a practice of upwards of 23 years, Dr. T. says he has met with but one case of erysipelatous peritonitis during the puerperal state, and has seen but very few cases of even simple peritonitis in the parturient female. In these there were wanting the well-marked pathognomonic features of the much dreaded and unmanageable form of *true child-bed fever*. The full development and vigour of the woman of California appear to enable her to endure all the pains and difficulties of maternity with singular freedom from consequent injury.

The report on the *Medical Botany of California*, by Dr. W. P. GIBBONS, is chiefly interesting from the testimony presented in respect to the therapeutic virtues of the *Grindelia* in cases of asthma.

A report follows from Drs. A. B. STOUT, S. M. LOGAN, and R. E. STEARNS, the Committee on Cultivation of the Cinchona Tree, and the appropriation of public lands for Botanical Farms, etc., and on the use of the Thermal and other Mineral Springs, in the Treatment of Chronic Diseases. An interesting report, but of an interest chiefly local.

The subject of *Probationary Asylums for the Insane* is very sensibly discussed by Dr. A. B. STOUT.

On *Fractures and Dislocations of the Astragalus*, with illustrative cases, is the title of a paper by Dr. JAS. SIMPSON.

Dr. C. CUSHING advocates the employment of the *Forceps versus Ergot*, as a means of facilitating the birth of the child, under the same circumstances in which the latter is resorted to. With his leading conclusions we are led entirely to agree from the results of our own ample experience.

The history of an *Epidemic Dysentery*, which prevailed in San Joaquin County, California, during the spring and summer of 1871, is given by Dr. F. WALTON TODD.

2. The volume comprising the *Transactions of the Annual Session of the Medical Society of Virginia* commences with the Address of the President, Dr. A. M. FAUNTLEROY, the theme of which is the *vis medicatrix naturee*, in regard to which Dr. F. has made some just and very pertinent remarks.

A very able and elaborate report is presented by Dr. A. S. PAYNE, on *Epidemics of Piedmont District, Va.*, for the years 1846 to 1862, inclusive, with remarks upon the Topography, Hydrography, Petrology, etc., of the District; any useful analysis of which would carry us far beyond our limits.

Next in order is the *Report of the Committee on Epidemics of Tide-Water District*, being a continuation of the report of last session on *Paludal Fever*. It is full of interesting facts, but is too extended for our limits.

A similar remark may be made in regard to the report on the Anatomical, Physiological, and Pathological differences between the White and Black Races, and the modifications of the treatment of the diseases of the latter required in consequence—by Dr. T. P. ATKINSON.

Some judicious remarks are made in the next paper by Dr. W. B. GRAY, on the Hypodermic Use of Sulphate of Strychnia, as an Optic Nerve stimulant.

A case is related by Dr. I. S. APPERSON, in which a large pelvic abscess discharged itself externally through an opening in the rectum, followed by the entire recovery of the patient, a married lady, 20 years of age; the abscess forming during confinement.

Dr. WM. D. HOOPER reports a case of *Extra-Uterine Pregnancy*, in which a foetal skeleton was removed by abdominal incision, with entire recovery of the patient, a married lady, 30 years of age, the extra-uterine pregnancy occur-

ring at an early period during her second marriage: remarks are appended as to the pathology and treatment of the case.

A novel case is related by Dr. O. B. JENKS, of *Extreme Mobility of the Knee-joint of a New-born Child*.

A highly interesting and we think conclusive report follows from the committee appointed to investigate the effect upon the health of women by the use of the *sewing machine*. After a careful accumulation of facts bearing upon the subject, the committee conclude as follows: "From all these facts, remembering that, among so large a class of women as use the sewing machine, engaged in any work, many will be found ailing, and making due allowance for exaggeration and the character of some of the weaknesses ascribed to the use of the machine, we think it safe to conclude: *First*. That fatigue is not disease, and there is no reason to conclude that the use of the muscles employed in machine work for a reasonable time is injurious.

"*Second*. That the machine may be used for four or five hours daily in a family by a lady in ordinary health without injury.

"*Third*. That the damage to health in the factory is due to the bad hygienic conditions (bad air, etc.) under which the work is done, and the natural delicacy of some of the operatives, unfitting them for long-continued labour of any kind.

"*Fourth, and lastly*. That the sewing machine is a great boon to woman-kind, increasing her compensation, protecting her sight, and, in the family, lessening her labours."

Dr. W. D. HOOPER describes a new apparatus for the treatment of *Compound Fractures and Stumps after Amputation*, with eight illustrative cases.

3. *The Transactions of the Medical Society of the State of West Virginia* were introduced by the usual annual address from the President, Dr. I. M. LAZZELL, in which he treats chiefly of the character and duties of the Society, its successful organization, and its influence, if properly conducted, upon the State, and upon the best interests of the community at large.

A report was presented by Dr. B. ROEMER, on the *Meteorology and Epidemic Diseases of the Kanawha Valley*, with especial reference to Kanawha County. The interest of this well drawn up report is mainly local.

Next follows a sensible paper on *Sudden Death in Puerperal Cases*, by Dr. S. L. JEPSON. The doctor examined carefully the principal causes of sudden death, during and after labour, as far as we are able to determine them. An attempt has also been made by him to indicate the predisposing circumstances present in each case, and, in conclusion, offers a few remarks on the subject of *treatment*, especially that which is preventive.

A Synopsis of Insanity is the title of a paper by Dr. A. H. KUNST. The subject is too vast and intricate a one to permit much light to be thrown upon it, in the short space devoted to its consideration by the author.

A case is reported by Dr. E. A. HILDRETH, in which variola and vaccina occurred simultaneously in the same infant, running through their several stages, without exercising, apparently, any influence upon each other. From this case Dr. H. concludes that, to obtain the preventive power of vaccination, it must be performed before the period of incubation of smallpox commences.

Next follows a report by Dr. B. ROEMER, on *Mono-bromide of Camphor*, in which the new remedy is described and its chemical relations determined. Dr. Deueffe, of Ghent (see No. of this Journal for July 1872, p. 292), used it successfully as a sedative for the nervous system in hysteria, insomnia, and the spasms of infants during dentition.

Dr. E. D. SAFFORD presents an account of *Parkersburg Mineral Wells*, the medical virtues of which correspond with those of the Bedford Springs of Pennsylvania. A quart of water from the "Wells" contains—

Carbonic acid gas	. . . . .	16 cub. in.
Sulphate of magnesia	. . . . .	10 grs.
Sulphate of soda	. . . . .	24 "
Sulphate of iron	. . . . .	4 "
Chloride of lime	. . . . .	41 "
Carbonate of soda	. . . . .	4 "

A trace of iodine.

There is also on the same premises a spring of strong chalybeate water.

By the same gentleman is presented an interesting paper on the *Specific Contagion of one form of Puerperal Fever*, the leading views advanced by him correspond with those we have drawn from a very careful study of the subject.

4. The proceedings of the *Annual Session of the State Medical Association of Arkansas* comprise but few scientific communications that demand especial notice. The first is a novel case of Parturition with Recto-Vaginal Fistula, by Dr. I. A. DIBRELL, Sr. Delivery after craniotomy, followed by recto-vaginal fistula. In a second labour, one lower extremity up to the hip, passed through the fistulous opening into the rectum. Delivery effected by a perineal section. The entire history of the subject of this case is especially interesting.

Next follows the history of a congenital case of *Occlusio-Vaginæ*, by Dr. I. A. DIBRELL, Sr., cured by operation.

5. The *Transactions of the Annual Meeting of the Wisconsin State Medical Society* was opened by an address from the President, Dr. J. FAYLL, on the relation the medical profession holds, and ought to hold, towards the community at large.

The first of the professional reports is that of Dr. W. MEACHER, on *Surgery*. It embraces, 1st, a pyogenic ovarian cyst, removed by gastrotomy; death second day after operation. Next item, a case of *protracted use of chloroform*, for the relief of vesical disease, night and morning, for the space of eight months. Third, an account of the resection, with beneficial result, of the tibia and fibula, in a case of viciously united fracture. The fourth item is an account of a case of senile gangrene.

The report of the chairman of the Committee on Practice of Medicine, Dr. IRA MANLEY, embraces a short notice of diphtheria, its pathology, treatment, etc., of diabetes, of rheumatism, of cerebro-spinal meningitis, of epilepsy, of influenza, and of indigestion. These subjects are treated with great conciseness and may be read with profit by the young practitioner.

By Dr. P. Fox, a member of the same committee, is presented an able paper on *Cerebro-Spinal Meningitis*, in regard to which the same remark may be made.

In a report from Dr. I. I. BROWN, chairman of Committee on New Remedies, he speaks strongly in favour of the chloral hydrate as furnishing us with a reliable hypnotic with no bad after effects; an opinion which is endorsed by Dr. R. M. Wigginton, in a subsequent paper.

Dr. F. H. LINDE reports a case of *Severe Fracture of Skull, complicated with Hernia Cerebri*, with entire recovery at the end of some three months. This is a truly astonishing case.

A successful case of *Ovariectomy* is described by Dr. D. C. DAVIES.

An account is given by Dr. J. C. DAVIS of a case of *Suppurating Pleuritis* in a male child five years of age, in which recovery was effected by *paracentesis thoracis*.

Dr. S. L. MARSTON reports three cases of *Placenta Prævia*, the first terminating favourably after detachment of presenting portion of placenta. In the second death of the mother occurred after delivery with forceps. In the third case recovery took place after instrumental delivery of child, and removal of adherent placenta.

Dr. B. C. BRETT relates a case of *Compound Comminuted Fracture of Tibia*, in a man 21 years of age, with loss of an inch of bone, and fracture of fibula. The fracture healed with half an inch shortened but useful limb.

A sensible paper follows on the use of *Anæsthetics in Midwifery*, by J. B. CORY, M. D. In the next paper, Dr. J. I. BROWN offers some suggestions on the use of anæsthetics, recommending in a case of labour the mixture composed of one part of alcohol, two of chloroform, and three of ether, as in all respects superior to simple chloroform.

An interesting case of *Intussusception* with successful termination, is related by Dr. BROWN. There appears to us to be some doubt as to the accuracy of the diagnosis in this case.

A paper on the *Correlation of Forces in Physiology and Medicine*, by Dr. I. E. DAVIES, is deserving of an attentive perusal. It scarcely admits of any concise analysis. The paper is a very elaborate one on a confessedly complex subject.

Dr. I. H. VIVIAN gives an account of his own case, that of *Fractured Skull with Depression of Cranium*, from which he finally recovered; suffering comparatively few serious morbid results from the injury.

Dr. E. L. GRIFFIN relates a case of *Cæsarean Section* terminating fatally. On autopsy, some twenty-seven hours subsequently, there was revealed a single subperitoneal tumour, having its point of origin and attachment upon the anterior surface of the body of the uterus, lifting in its growth the latter organ into the upper part of the abdominal cavity. Circumference of tumour 30 inches at its largest diameter, and 27 at its shortest. Estimated weight about 30 pounds. The uterus was found firmly contracted, and of the usual size after delivery. No blood, the result of the operation, found in the abdominal cavity.

6. *Medical communications, with the proceedings of the Annual Convention of the Connecticut Medical Society.*

The annual address of the President, Dr. G. W. RUSSELL, notices in brief review some of the "*Causes of Disease*."

The first communication is the *Report of the Committee on Matters of Professional Interest*, by H. A. CARRINGTON, M.D. It comprises short reports from Hartford, New Haven, Middlesex, and Litchfield Counties, giving a sketch of the state of health in each, the character of the prevailing diseases, and more prominent accidents occurring in each.

The second communication, by Dr. H. BRONSON, treats of the *History of Intermittent Fever in the New Haven Region*, with an attempt to distinguish known from unknown causes in its production. This communication presents many points of interest in respect to the etiology of the fever of which it treats.

Next follows a long and elaborate report, by Dr. W. B. DE FORREST, on *Public Hygiene*, which presents a very just view of the leading facts connected with the subject of which it treats.

The fourth communication is from Dr. W. L. BRADLEY on the *Treatment of Puerperal Convulsions*. The subject is discussed with great fairness and ability. To the general views emitted by Dr. B. we feel inclined to add our assent.

The fifth communication, by Dr. H. M. KNIGHT, is upon a very important and as yet but little understood subject, *Hallucinations of Children*. Dr. K. has, we believe, taken the rational and correct view of the subject. The hallucinations of children we have found to be in a great measure the result of a neglect, or of gross errors committed in the early education, moral and religious, of the little patients, easily prevented by a wise early education of the child's mental and moral faculties. Their cure will always be tedious and difficult.

7. *The Transactions of the Colorado Territorial Medical Society* embrace but a few short papers, exhibiting but little elaboration. They are all, however, sensible productions, with a direct practical tendency, conferring great credit upon their writers, labouring as they do under many disadvantages—the sparse population furnishing comparatively slight material, and the remote distance causing them to depend mainly on their own unaided resources of observation.

D. F. C.

ART. XXIII.—*The Science and Art of Surgery, being a Treatise on Injuries, Diseases, and Operations*. By JOHN ERIC ERICHSEN, Senior Surgeon to University College Hospital, etc. etc. A new edition, enlarged and carefully revised by the author. Illustrated by upwards of 700 engravings on wood. 2 vol. 8vo. pp. 781 and 918. Philadelphia: Henry C. Lea, 1873.

FOR nearly twenty years "Erichsen's Surgery" has been a favourite with English-reading practitioners and students the world over, and it may, we think, be safely said, that the majority of American physicians under forty years of age are to-day mainly governed in their treatment of surgical diseases and injuries by the opinions and recommendations of the "Senior Surgeon to University College Hospital, London." Though it is only about four years since a really new and revised edition was issued in England and republished in this country under the editorship of Dr. John Ashhurst, Jr., yet Mr. Erichsen in October last brought out the sixth English edition and simultaneously a new American one, endeavoured to be made "more deserving than its predecessors of the favour that has been accorded to them," containing several paragraphs which it is trusted "will be found to increase the practical value of the work." We have found upon careful comparison of the present edition and that of 1869 some changes in the arrangement of subjects; some differences of opinion as to the value, real and relative, of operative and other modes of treatment; some added paragraphs on diseases and operations not referred to before; some enlargements of statistical tables. At the same time there is a very general ignoring of the valuable notes of the American editor of the edition of 1869; the retention of several statements the errors of which have been pointed out by various writers and reviewers during the past four years; the omission of any notice of some valuable therapeutic and surgical measures; and the renewed declaration of views on certain subjects not in accordance with those of

the most recent writers. As this work has been so recently reviewed in our columns (No. for Jan. 1870), we shall on this occasion merely call attention to a few of the changes we have observed, and some of the views still maintained to which we cannot yield our assent.

In the chapter on *Amputations in General*, the vexed question of "hospitalism" is referred to, and we infer that Mr. Erichsen does not believe that the larger the hospital the greater the mortality.

Secondary amputation of the leg is now pronounced more fatal than primary, a declaration contrary to that previously given, but in accordance with the views held by the best modern surgeons, and confirmed by statistics; nearly 600 cases giving four per cent. in favour of the immediate operations.

The chapters on *Inflammation*, *Suppuration*, *Ulceration*, and *Repair*, have been largely recast and many changes made.

In the treatment of inflammation, mention is made of the use of aconite and belladonna, and of the cutting off of the blood supply to the diseased part either by ligature, or, much better, by digital compression, which, "though we may not go so far with Neudörfer as to suppose that it obviates all necessity for constitutional treatment, appears to be a remedy far preferable to local bloodletting."

The "antiseptic treatment by means of carbolic acid" is considered at length and highly recommended, though it is not maintained that it will always accomplish all the good that has by some been claimed for it; indeed the very just statement is made that "theoretically it is perfect; in practice its success is not constant."

Torsion is considered at much more length than previously, but is evidently not a favourite method of procedure with our author, who declares that, "when applied to the principal arteries of a limb, it presents no advantage over the ligature," but only when employed on the smaller arteries, and "when as in plastic operations direct union is of the first importance."

The chapter on *Arteritis* has been both modified and enlarged, the disease being described under the heads of acute and chronic, instead of diffuse and limited, as before, the existence of the diffuse or erysipelatous form being doubted, its symptoms being considered as "dependent on some of the various forms of blood poisoning."

It is asserted that spontaneous cure of aneurism can only take place in arteries of the second and third magnitude, and never in aneurisms of the aorta. That this is a mistake has been shown by Mr. Moxon (*Guy's Hospital Reports*, 3d series, vol. xii.), and we have ourselves seen a case under the care of Dr. Bartholow, of Cincinnati, in which the *post-mortem* by Dr. Whittaker showed laminæ of fibrin, "the thickness of said deposit measuring at numerous points one and one-quarter inches. The outermost layers of fibrin are so completely organized that it is difficult to distinguish them from the true adventitia of the vessel." In this case, though, for weeks before death, the patient had been taking the iodide of potassium and egotin, yet we believe that, prior to the institution of such course of treatment, nature had been making an effort toward spontaneous cure, the evidence of which was presented in the thickness and high degree of organization of the fibrinous laminæ. No mention is made of the hypodermic use of ergotin in the constitutional treatment of aneurism, except the merest reference to Langenbeck and Dutoit's cases in the paragraph on the treatment of subclavian aneurism.

To the statistical tables of operations upon the several arteries previously published, additions have been made, though even yet the statistics are not as full and complete as might have been expected. For example, the table of

"aneurisms of the innominate treated by ligature of the subclavian only" remains as before, four cases being given; to these should be added at least two more in which the vessel was tied, once by Blackman, and once by Bryant. The table of similar cases treated by ligature of the carotid only, shows nineteen cases instead of the previously given ten, and to this list should be added Ordile's case, and two additional ones by Pirogoff. An increase of four cases appears in the list of ligations of both subclavian and carotid arteries, but no mention is made of Hobart's operation. Of all these operations for the relief of innominate aneurism an unfavourable opinion is expressed; that by ligature of a single vessel being declared unjustifiable, consecutive ligation of the two being practically no better, and the simultaneous closing of the two, while the best of the operations, yet probably no better in the most favourable cases than treatment by proper "palliative and constitutional means."

The table of "cases of ligature of both carotids" remains as before; though it is much to be regretted that the numerous mistakes in it (noticed by the late Dr. Blackman in his review in this Journal for January, 1870), were not corrected before the present edition was published. To the list given should be added the case of the late Dr. H. E. Foote, of Cincinnati, in 1867.

In the list of ligations of the abdominal aorta, we find no mention of Watson's case. It seems strange that of four recent works on Surgery published in London, viz.: "Gant," "Fergusson," "Bryant," and "Erichsen," only Fergusson makes reference to this operation done in Edinburgh, in 1869, and reported in the *British Med. Journal* for August 21, of that year.

Ligature of the common femoral, that five years ago our author thought ought to be banished from surgery, is now more favourably spoken of, though not regarded as preferable to ligature of the external iliac.

In the chapter on *Fractures* the broken clavicle is still recommended to be treated by the useless axillary pad and bandages, not a word being said about the employment of adhesive plaster, which, especially by the method of Sayre, is capable of producing the best of results with the least inconvenience to both patient and surgeon.

Fractures of the thigh are stated to be "frequently cured without any shortening or the slightest apparent deformity;" as was said by the reviewer of the preceding edition, "this opinion is not generally accepted in this country," and the authoritative expression of it by Mr. Erichsen is "especially to be regretted."

In the chapter on *Gangrenous Diseases* no mention is made of the use locally of either bromine or the permanganate of potassa, agents which gave the best results during our late war.

Lymphadenoma, elephantiasis, and lymphatic varix are among the new subjects treated of. For the relief of elephantiasis, ligation of the main artery of the limb is more highly spoken of than perhaps the full history of cases operated on would warrant, it being probable that it is rather temporary than permanent benefit that is received from the operation. In the chapter on "deformities," we find that "Birch, of New York, in 1814," modified Rhea Barton's operation of 1835; it should, of course, have been "Buck, of New York, in 1844."

In performing paracentesis thoracis the "fifth intercostal space at the line of insertion of the serratus magnus" is still recommended as the most convenient spot. Bowditch, in his recent letter to Dr. Allbutt, of Leeds, says, that the best place for tapping is "in a line with the inferior angle of the scapula, and between the eighth and ninth, or ninth and tenth ribs, and at least an inch and a half above a horizontal line drawn through the lowest point at which the respiratory murmur is heard in the other lung."

To the description given of Amussat's method of making lumbar colotomy there might with propriety have been added an account of Allingham's method, which has the advantage of taking a fixed point on the crest of the ilium as a guide to the location of the centre of the oblique incision, viz., a spot "full half an inch posterior to its centre, measured between the two superior spinous processes."

Among the very few changes in the remarks made on "disease of the large intestine and anus," we notice a reference to forcible distension, by the fingers or hand, in spasmodic contraction of sphincter ani, a method of treatment which might with propriety have been directed for the relief of fissure, and which the teachings and practice of Van Buren, of New York, have rendered so familiar to American surgeons.

In the part of the work devoted to the consideration of "diseases of the genito-urinary organs," a number of points have attracted our attention. We have found nothing said about nephritic and perinephritic abscesses dependent upon the presence of a calculus, nor nephrotomy, nor extirpation of the kidney.

In a paragraph on the bilateral operation, Eve is credited with 78 cases, with 8 deaths; in a recent paper that surgeon reports his 90th case, "with a mortality of 8; of the last 45 only 2 proved fatal, these survived nearly two weeks, and died then from causes independent of the operation." In the same paper it is shown that Dudley operated 225 times with a mortality of 7.

Cystotomy is pronounced "certainly a proper procedure in extremely chronic and otherwise incurable cases" of irritability of the bladder. A solution of the sulphate of quinia (gr. j— $\bar{3}$ j) is recommended as "one of the most useful injections for cleansing the bladder of viscid, ropy mucus." Attention is called to the injurious effects of repeated catheterization, due, it is thought, to the introduction of air which gives rise to decomposition of the urine, or, as others declare, to bacterianism, the organisms being introduced with the air or upon the instrument. Among other methods of treatment of stricture there is described the operation of "opening the urethra *behind* and through the stricture," which it seems to us is not so satisfactory as that of opening the urethra in front of the stricture upon the end of a staff or catheter, and then carefully cutting through the stricture, an operation in many cases altogether to be preferred to any other for the relief of the over-distended bladder.

Considerable attention is for the first time paid to the causes of death during the treatment of stricture, and the post-mortem appearances of the kidney in such cases are detailed at length.

Though uterine fibromata are, as is said by our author, "not very amenable to treatment," still we have accumulating testimony to the beneficial effects of the administration of ergotin.

Mr. Erichsen has noticed most of the "new things" to which the attention of the profession has recently been so strongly called, but some are not fully discussed. Carbolic acid and Calabar bean are referred to; the hydrate of chloral is highly spoken of for the relief of cerebral irritation, in the sleeplessness that is present in the early stages of concussion of the spine, in cases of tetanus, and irritable bladder; ergotin is merely alluded to as having been administered in cases of subclavian aneurism, but no mention is made of it in the treatment of the various hemorrhages, nor for the diminishing of the blood supply to morbid growths. The surgical applications of electricity are but little referred to; the galvanic cautery is spoken of in the treatment of sinuses; the galvanic *écraseur* in removal of the tongue, hemorrhoidal tumours, and *nævi*.

Pneumatic aspiration is mentioned as a diagnostic and curative measure in

some cases of abscess and as a method of tapping the chest; but is not referred to in the treatment of hernia or the over-distended bladder, nor indeed has the prominence been given it in any part of the book that it really deserves.

"Transplantation of cuticle" is described at some length, and is pronounced "interesting in its scientific aspect, . . . full of promise in its application to plastic surgery, . . . and in many instances of the greatest value in facilitating the cicatrization of large ulcerated surfaces."

Some reference is here and there made to the increase and decrease of temperature in surgical diseases and injuries, but we have seen no notice of the immediate local rise that takes place after ligation for aneurism, nor of the decided and persistent low temperature after extensive wounds, especially penetrating wounds of the thoracic and abdominal cavities. Redard, a year and a half ago, called attention to this subject, and we have ourselves found the thermometer a valuable aid in forming a prognosis in a case of stab-wounds of the chest and abdomen.

The present edition of "Erichsen" is an improvement on its predecessor, but we must confess to a sense of disappointment at finding so many things not mentioned that we expected would be, so many left as before that we confidently thought would have been modified or omitted.

P. S. C.

ART. XXIV.—*The Pharmacopœia of the United States of America*. Fifth Decennial Revision. 12mo. pp. 383. Philadelphia: J. B. Lippincott & Co., 1873.

THIS revision appears after about the usual period subsequent to the meeting of the Convention, in the form of that for 1870, but with an improved appearance in the quality of the paper and of the typography.

There has been, both in the materia medica and the preparations, changes of considerable importance, consisting in the introduction of new articles whose value has been confirmed by the testimony of experience, and the exclusion of such as have either lost the favour in which they were formerly held, or have been superseded by others of more efficiency.

To the primary list twenty-four additions have been made. Some as sources of remedies, others for use as remedial agents, among which may be noted phenyl alcohol, under the more familiar name of Acidum Carbolicum, Cannabis Americana and Indica, Cerii Oxalas, Chloral (its hydrate), Conii fructus, Iodoformum, Physostigma (Calabar bean), with two hyposulphites and four hypophosphites. To Alumen a new meaning is now attached, by designating the ammonia alum as the salt intended, the potassa alum being now *Aluminii et Potassii Sulphas*; this seeming to have been done in conformity with commercial relations, as the ammonium being cheaper than the potassium salts, have nearly superseded the latter in the manufacture of this compound.

The only substance dropped from the primary list is *Oleum Bubulum*, which has been considered in former revisions as the best material for the production of citrine ointment, while four have been transferred to the primary list; one, *Gossypii Radix* (the bark only, as the part to which its activity is due), under the name of *Gossypii Radicis Cortex*.

There has also been transferred from the preparations to the primary list, *Acidum Valerianicum* and *Zinci Valerianas*.

In the important consideration, that of defining strictly the nature and

properties and the particular parts intended to be used, much advance has been made in the use of terms more in consonance with the investigations and nomenclature of modern science.

In the chemical nomenclature the most striking difference will be observed in rendering uniform the termination for the metallic radical of the salts, in accordance with the nomenclature some time since so ably advocated as necessary in the subsequent revision of the British Pharmacopœia, by Prof. John Attfield, of London, whose "Practical Chemistry and Pharmacy" has been adopted as a text-book by several of the schools of pharmacy of this country. This nomenclature, though not strictly in accord with any of the modern systems, is well adapted to pharmaceutical purposes, combining simplicity with accuracy, and not varying from that formerly in use, except in the alkaline and earthy salts.

The changes in the preparations are more extensive. New classes are added as additional forms for medicinal use, viz., Chartæ (cantharidis et sinapis), Glycerita five, Succa two, and Suppositoria nine in number.

Among the chemical preparations added may be noted Ammonii Bromidum et Iodidum, Ferri Oxalas, Lithii Citras, Sodii Arsenias, Liquor Arsenici Chloridi, Liquor Ferri Chloridi (four times the strength of the Tinctura F. C.), and precipitated mercuric oxide, under the appropriate pharmaceutical name of Hydrargyri Oxidum Flavum, while the very unstable preparation, and one readily made extemporaneously if desired, Acidum Hydriodicum Dilutum, has been dismissed. To the scale salts of iron one has been added, Ferri et Strychniæ Citras, containing one per cent. of the alkaloid, and in their preparation the temperature of evaporation is restricted to 140°.

To the Aquæ two—A. Anise and A. Acidi Carbolici—are added, the latter containing less than one and a half per cent. of the acid. A separate formula is given for Pyroxylon, and one to prevent its too great contractility is given in collodium flexile, in which Canada Turpentine and Castor Oil are used; the same addition being also made to the Collodium cum Cantharide. The active principle of Digitalis has been made officinal, with directions for its preparation. To the Plasters the only addition is Emp. Aconiti, which is directed to be made from the extract, Extractum Aconiti, the epithet Alcoholicum being dropped from this and nine other extracts of a similar kind where only this form of extract is now recognized. The other alterations in the Extracts are the introduction of one from the American hemp, the former Ex. C. Purificatum now receiving the name, Indiciæ; of another from Calabar bean, Ex. Physostigmatis, and one from the seed of the Stramonium. It is in the fluid extracts that the greatest amount of change will be found, by the increase in the number of formulæ, and while, with one exception, each completed fluidounce of the preparation represents one troyounce of the crude drug, Glycerine in many of them has been made to replace Sugar, and the processes modified and rendered more uniform. In the fluid extract of Conium, muriatic acid is substituted for the acetic acid, as formerly directed. Among the additions may be noted Ex. Bellad. Fl., Conii fructus, Cubebæ, Digitalis, Gelsemii, Geranii, Krameriæ, Pereiræ, Rubi, Scillæ, and Senegæ.

Two have been added to the Liniments; Lin. Aconiti, in which Glycerine is used, and Lin. Plumbi Subacetatis, while the amount of water has been increased in the Lin. Saponis. To the formulæ for Liquores are five additions, with an appendix to that of the Liquor Ammoniacæ Acetatis, providing for its extemporaneous preparation at the bedside of the patient, where carbonic acid may be a desirable addition. Two of the formulæ contain preparations of Arsenic, L. Sodii Chloridi, and L. Sodii Arseniatis, of a strength uniform with

the solution which has so long retained its place in the pharmacopœias. Liquor Ferri Chloridi is a strong solution, which was formerly prepared as the basis of the tincture, but now made a separate formula. Liq. Potassii Permanganatis and Liq. Zinci Chloridi complete the list.

To the Oleoresins, that of Oleoresina Filicis is the only addition.

To the Spirits, the only addition is Sp. Juniperi.

The change in the mode of preparation of Sp. Ætheris Nitrosi is the most striking point in this class; the process known as that of Prof. Redwood having been adopted. This is more simple than the old process, operating so easily in practice as to be readily used by the pharmacist, who may thus always have a reliable preparation which he may with confidence recommend as fully up to the requirements of the pharmacopœia, and while there is more economy in material, the result is said to be as satisfactory as the best found in the market.

In the Tinctures, the changes are more in the ingredients to which their colour to some extent is due, Saffron and Red Saunders. Tinctura Aconiti Folii has been omitted; and although there is now only one tincture of aconite, the term Radicis is still, for obvious reasons, retained. The additions are T. Aurantii and T. Benzoini.

To the Troches, four have been added, viz., Trochisci Acidi Tannici, T. Morphiae et Ipecacuanhæ, T. Potassii Chloratis, and T. Santonini.

In the Ointments, that which has been known by the several names of simple ointment and lard ointment has now the single word Unguentum to express it; and, as in its formula yellow has been for pharmaceutical reasons substituted for white wax, is altered in appearance, and affects the colour of some of the others, as U. Hydrargyri Ammoniati and U. Plumbi Carbonatis, of which it forms the oleaginous basis. The additions are U. Acidi Carbolici, U. Cantharidis (Cantharidis Cerate reduced to one-fourth its strength), U. Hydrargyri Iodidi Rubri, U. Hydrargyri Oxidi Flavi (with the same strength as the U. H. Rubri), U. Mezerii, and U. Plumbi Iodidi. Ointment of Oxide of Zinc is directed to be made with Ointment of Benzoin, and this latter to be prepared from the Tincture, the alcohol being driven off by the heat of a water-bath.

In the preparation of Acetate of Zinc, direct solution of the Commercial Carbonate by Acetic Acid is substituted for the decomposition of the lead Salt by Metallic Zinc.

The further additions at the end of tables of the weights and measures of the U. S. Pharmacopœia and of the metrical system, together with the relations of the two systems, will be found very useful and serviceable both to the pharmacist and physician.

ART. XXV.—*A Treatise on Apoplexy, Cerebral Hemorrhage, Cerebral Embolism, Cerebral Gout, Cerebral Rheumatism, and Epidemic Cerebro-Spinal Meningitis.* By JOHN A. LIDELL, A.M., M.D., Ex-Prof. of Anatomy in the National Medical College, Washington, D. C., etc. 8vo. pp. xix., 395. New York: Wm. Wood & Co., 1873.

WE learn from the preface of this book that the author began to prepare from original cases and observations an article for publication in *The American Journal of the Medical Sciences*, but he soon found its length exceeded the

limits of a journal article, and it finally expanded into the octavo volume of nearly 400 pages now before us. After a careful reading of the book it appears to us that, had the author adhered to his original intention and published his own cases, classified, and not surrounded by the sometimes ill-assimilated observations of others, his labour would have been more judiciously expended.

There are a great many faults exceedingly prevalent in the literature of the day, which this treatise has not. It has not the least advertising or commercial flavour about it; it is free from offences against literary taste, and is so evidently a well-meant and honest attempt to contribute the writer's quota to the general stock of professional information that one cannot but consider it a loss to science that points should be deficient, which if complete would have thrown light on unsettled theories, and rendered this book a more valuable storehouse of facts.

The first chapter is principally concerned with definitions and statistics of frequency of apoplexy, and closes with a statement of the varieties of the disease.

Chapter II. adopts Niemeyer's views of the pathology of various forms of apoplexy, and shows that the essential lesion, whether produced by venous congestion, by œdema, or by hemorrhagic effusion, is anæmia, not necessarily in the sense of absolute deficiency of blood in the brain and its membranes, but of deficient supply of oxygenated blood to the air-cells, which may be as completely cut off from their supply of oxygen by venous congestion as by arterial stoppage.

"Nervous apoplexy is, in all probability, an intense form of cerebral anæmia which is suddenly produced by spasmodic contraction of the cerebral arteries, or rather of all the cerebral bloodvessels having a muscular coat."

If this is the true pathology, as seems not unreasonable, the close resemblance between some cases of apoplexy and epilepsy is easily understood.

In the next chapter we have the etiology set forth at length, although the connection between different causes and individual forms of apoplexy is not so distinctly shown as would be desirable. Dr. Lidell is inclined to believe, in a somewhat modified form, in the older doctrine of the existence of an apoplectic constitution or appearances. He also speaks of the undoubted hereditary tendency to apoplexy, and alludes to families where nearly all the members have died of this or kindred diseases.

Chapter IV. is upon the so-called congestive and serous forms of apoplexy, a subject of great interest and importance. Many of the cases detailed by Dr. Lidell were of a class by no means uncommon, especially in hospitals, where a patient, often addicted to liquor, becomes rapidly comatose or is found so, and when after death nothing definite can be found to account for the result.

The writer recollects well being present at the autopsy of two young men, apparently well, but hard drinkers, who were shut up in a station house, one for two or three weeks, the other for one night. The first had been eating abundantly, the second was arrested, "crazy drunk." Both were seen by a physician for the first time on the same morning, one dead, the other dying. The ventilation of the cells, though defective, was very far from being sufficiently bad to render it probable that death had taken place from asphyxia. The autopsies disclosed nothing but some hyperæmia of the brain and redness of gastric mucous membrane.

Cases more or less resembling these are far from being rare, and still further from being in any way satisfactory to the pathologist, but unfortunately this chapter does not clear up our doubts in regard to them.

In many of our author's cases only a moderate excess of blood in the cerebral

and meningeal vessels, a little serum in the meshes of the pia mater, not at all uncommon, certain appearances stated by our author as those of chronic alcoholism, and in others absolutely no abnormal appearances, were noted. How it is possible to call these cases of "congestive apoplexy," or indeed apoplexy at all, unless apoplexy is expected to include all cases of sudden or rapid death not otherwise accounted for, we do not see.

Our author justly condemns the practice of the New York police (which, however, is not confined to them) of considering every person found insensible as drunk, and treating him accordingly. If there is any doubt, the sufferer should have the benefit of it, and be carried to a hospital, or better still, each police station should have a *well-ventilated* room with a bed or beds which can be made comfortable, in which a doubtful case may be placed and get the best chance for life which nature can give him, instead of being confined in the cells and running the additional risks of bad air, a cramped position, and want of assistance. Even if there is no doubt and the patient is undeniably drunk, he has still some claims upon humanity, and it is by no means improbable that a little care may make the difference between drunkenness and such "congestive apoplexy" as we have had described in some cases in this chapter.

Chapter V. is upon cerebral hemorrhage, which, as our author states, is but rarely accompanied by the symptoms known as an apoplectic stroke. He narrates, however, one undoubted case occurring in a woman æt. 49, who fell as if struck by a powerful blow, and was found to have coagulated blood in the arachnoid cavity and in the ventricles. The kidneys were small, hard, and granular.

Trousseau states that he has never seen a case of this kind, so rare is this sudden invasion of cerebral hemorrhage.

To Chapter VII. on nervous apoplexy, cerebral gout, cerebral rheumatism, etc., the author contributes one case of death from "shock," the abdominal cavity having been opened by a cannon ball; and one case of death with cerebral symptoms in acute rheumatism. He says, "I observed that as she grew worse her bodily temperature, as measured by my sense of touch, seemed to increase in a decided manner instead of diminishing, and that when death occurred her skin felt very hot, thus reminding me strongly of some fatal cases of sunstroke which I had seen." No autopsy was allowed. The relations of this case to apoplexy seem somewhat remote.

Infantile cerebral hemorrhage is shown to be a not uncommon affection. We doubt, however, the propriety of calling the cerebral symptoms, even if suddenly developed, coming on at the end of acute diseases, especially of the bowels, by the name of apoplexy.

The chapter on pulmonary apoplexy seems out of place in this book—as the author himself perceives—notwithstanding the fact that extravasation of blood into the lungs does once in a while prove rapidly fatal, and may then be mistaken for cerebral apoplexy, and the observation of Brown-Séquard that certain injuries to the pons Varolii give rise to pulmonary hemorrhage.

The work is concluded by a chapter on cerebro-spinal meningitis, which disease may in its latter stages, in those cases which are fatal in a few hours, counterfeit apoplexy. We find in it, however, but little that is new concerning the pathology and treatment of the disease.

ART. XXVI.—*A Treatise on Relapsing or Famine Fever.* By R. T. LYONS, Assistant Surgeon, Bengal Army. 12mo. pp. xii., 384. London: Henry S. King & Co., 1872.

DR. LYONS announces in his preface that "this work is an adaptation of the chapter on relapsing fever in Murchison's *Treatise on the Continued Fevers of Great Britain* to the disease as it has been observed in India." If it was really his intention, when he began to write, to note simply the modifications impressed upon the disease by the peculiarities of the climate and people of India, and had he adhered closely to his original purpose, we do not doubt that the book would have been a valuable one. But his aim was evidently a more ambitious one, that of forcing upon his readers the conviction of the complete identity of relapsing fever with the various forms of malarial fever. We use the word forcing, for we have never seen in print a theory which the proposer has taken so little trouble to maintain by argument. Assertion there is plenty of, and the author seems to think, that his *ipse dixit* is sufficient to establish any opinion, no matter how much at variance it may be with that generally held. "I absolutely reject," he says, "the malaria theory of the origin of fevers. It is unworthy of permanence. It calls upon us to believe that the fevers are due to something unknown."

Even if we admit with Oldham¹ or Black² that the so-called malarial fevers are due to chill, there does not seem to be sufficient reason for abolishing the distinction which is usually thought to exist between them and relapsing fever. Murchison, who had probably as good an opportunity of observing the fevers of India as the author, has indicated very clearly the distinguishing characteristics of the two classes of fevers. "No form of tropical remittent fever was ever observed," he says, "where the febrile paroxysm lasted continuously for five or seven days, was then followed by a complete intermission of a week, and afterward, with tolerable regularity on a certain day, by a return of the fever for three or five days." We need not point out to our readers that one disease is contagious, and that the other is not; that in one quinia is powerless to prevent the relapses, that in the other it deservedly enjoys the reputation of a specific, and that the percentage of mortality in the two diseases is very different. The last epidemic of relapsing fever has shown also that there is at least one other important difference between them. It is well known that negroes enjoy in this country a comparative immunity from the effects of malaria, but it will be remembered that in the spring of 1870 the death-rate from relapsing fever was much higher among them than among the whites.³ Moreover, the conditions under which the remittent fevers arise are entirely different from those which the author, in common with other observers, supposes to be favourable for the engendering of relapsing fever. There are many fertile tracts in our Southern country which have been rendered uninhabitable by malaria, and intermittent and remittent fevers have prevailed in the midst of the greatest abundance, and have affected the rich equally with the poor.

We have said enough perhaps to show that there is still ground for maintaining the distinction between remittent and intermittent fevers on the one hand,

¹ What is Malaria? London, 1871.

² Trans. Amer. Med. Assoc. vol. xviii., 1867.

³ At the Municipal Hospital, Philadelphia, the percentage of deaths was, among the whites, 1.6; among the negroes, 25.4.—*Report of the Board of Health, Philadelphia, 1871.*

and relapsing fever on the other. We have said that the author adduces very little argument in support of his startling proposition, and in order that we may not be thought to do him injustice, we will quote the only passage which is referred to in the index under the head of "Malaria":—

"A passing reference is due to the belief that was at one time paramount, but which is now undermined and fast crumbling away, regarding the origin of the special form of fever which is the subject of this work. It was imagined that this disease, which was described under various names, and imperfectly understood, and even hardly discriminated from other forms of fever, was due to malaria, or some subtle atmospheric agency, which was generated under certain physical conditions of locality. It is unnecessary to enter into the reasons which justify the rejection of the malaria theory of the origin of fever."

Dr. Lyons devotes one hundred pages, more than a fourth part of his book, to the history of relapsing fever as it has been observed in India. This would have more value if it were not clear that he had included under this head the reports of epidemics of remittent fever. He seems to us also scarcely justified in regarding the illness of the survivors of the catastrophe of the Black Hole of Calcutta, as being the first instance of relapsing fever occurring in India of which we have a well authenticated account. His principal reasons for thinking so appear to have been the relapse which took place in Mr. Holwell's case—under circumstances of great fatigue—the eruption of boils and the occurrence of swelling of the legs attributed by the sufferer himself to gout, a disease with which he seems to have been familiar from previous attacks. There is no evidence of the disease spreading to those whose company Mr. Holwell was involuntarily forced to keep for some time after his release from the Black Hole.

Relapsing fever as it exists in India does not appear to have differed materially from the disease as it has been observed here. Jaundice occurs in about the same proportion of cases, and hemorrhage from the stomach, occasionally resembling black vomit, is also a rare symptom; but cutaneous eruptions, on the other hand, are of more frequent occurrence. In fact the author makes an eruptive variety of the disease, although it is to be regretted that he does not very distinctly point out the characters of the rash. Murchison has called attention to the fact that in the jaundiced cases the constant scratching sometimes gives rise to an eruption of urticaria, and it may be that our author has observed nothing more than this. Pericardial effusion appeared also not to be very uncommon, having been so prominent a condition in one of the epidemics described in the book that the disease was regarded as epidemic pericarditis.

The book contains some interesting information in regard to the habits of the natives of India, their pecuniary difficulties and thriftlessness, but if the reader wishes to become familiar with the etiology, course, diagnosis, and treatment of relapsing fever, we would recommend him to read the chapter on this disease in Murchison's treatise.

J. H. H.

ART. XXVII.—*Notes on Smallpox and its Treatment.* By W. GAYTON, Medical Superintendent of the Homerton Smallpox Hospital. Pamphlet, pp. 48. London: J. & A. Churchill, 1873.

DR. GAYTON'S position as Medical Superintendent of a smallpox hospital has afforded him abundant opportunities for studying the disease and for observing

the effects which remedies have upon it. In the little *brochure* before us he gives "a concise account of the disease and its complications, and such hints relative to treatment as have suggested themselves in daily experience." The description of the various forms of smallpox is excellent, and the remarks which the author makes as to treatment are judicious, but we do not find many novel suggestions. He is inclined to place some reliance, in cases marked by a high temperature, upon large doses of quinia frequently repeated, recommending in fact that as much as fifteen grains of the sulphate should be given every four hours. He says the effect upon the temperature is very marked, one of 103° or 104° being frequently reduced within twenty-four hours to 100° , 99° , or even to the normal standard. In many in whom recovery seemed hopeless it succeeded in establishing convalescence, but, he takes care to add, it is unwise to extol a remedy which has not yet stood the test of long experience. He has found, in the early stages of the eruption, that a lotion holding the sulphuret of calcium in solution (the *lotio sulphuris cum calce* of the British Pharmacopœia) is a useful application. To insure its success the patient should be rubbed with it over the whole body every four or six hours, and this should be persevered in thoroughly and well until the sixth or seventh day. It acts directly upon the papules, completely destroying them, and thus by preventing their reaching the stage of pustulation the patient has not to undergo the severe secondary fever.

Dr. Gayton is, like all other physicians occupying a similar position, a firm believer in the protective power of vaccination. In summing up his experience on this point he says, "It is clearly seen that those who are not vaccinated die at the rate of more than 37 per cent.; those with one vaccination cicatrix, at above 12 per cent.; with two cicatrices, at about $8\frac{1}{2}$ per cent.; with three cicatrices, at a little over 7 per cent.; with four cicatrices, at $3\frac{1}{2}$ per cent.; whereas, with five or more cicatrices, the mortality is reduced to $2\frac{1}{2}$ per cent." This statement of the results of his observation is not only a strong argument in favour of vaccination, but also in favour of the insertion of the virus in more than one place. It would have been interesting if he had told us how long subsequent to the date of vaccination his patients were attacked with smallpox, more particularly as there is a growing belief in the profession that the protective influence of vaccination diminishes directly in proportion to the length of time which has elapsed since the performance of the operation. Old age and infancy are shown to be the periods of life at which the disease is most fatal, and this is true of the vaccinated as well as of the unvaccinated. No one, it is presumed, doubts the contagiousness of smallpox, but we fancy that our readers will agree with us in thinking that the case in which the author supposes a patient in London to have conveyed the disease to a healthy woman in Dublin by sending her a letter, may be more satisfactorily explained in some other way.

Among the cases reported by Dr. Gayton is one in which tetanus occurred as a complication. A *post-mortem* examination revealed congestion and softening of the brain, and upon the under surface of the pons Varolii, extending along the under surface of the medulla oblongata (where it abruptly ended), was found a thickish layer of concrete pus. On the posterior surface of the medulla oblongata there was a similar layer of pus, which appeared to end at its junction with the cord, the superior two inches of which were free from exudation, but with this exception the posterior surface of the cord throughout its entire length was covered with exudation like that already described. The cauda equina was infiltrated with fluid pus. It does not seem to us unlikely that the case was really one of cerebro-spinal fever, especially as it is said there were only a few variolous pustules on the body.

A pregnant woman is regarded by the author as less likely to take smallpox than one who has just been delivered. The sanguineous plethora which, he says, is usually more or less decided in pregnant women renders absorption more difficult, hence it is somewhat rare to find pregnancy complicated with variola. After parturition, on the other hand, absorption becomes again easy, owing to the plethora being diminished by depletion of the vascular system, and by the comparative emptying of the abdomen caused by the decrease in the volume of the uterus. The difference between the hemorrhagic and the malignant forms of the disease is very clearly pointed out, the details of two cases belonging to the former class being added by way of illustration. A much fuller description of the malignant form than the author gives will be found in a lecture on "The Pathology and Therapeutics of Variola," by Dr. Zuelzer (see abstract at page 534 of the preceding volume of this Journal), by whom the subject is very fully discussed.

The pamphlet contains several charts showing the variations of the temperature and pulse in the various forms of the disease. J. H. H.

ART. XXVIII.—*A Study of some Points in the Pathology of Cerebral Hemorrhage.* By CH. BOUCHARD, Docteur en Médecine, Interne (Lauréat) des Hôpitaux de Paris, etc. Translated from the French, with notes. By T. J. MACLAGAN, M.D. Edin. pp. viii., 87. Edinburgh: MacLachlan & Stewart, 1872.

AN extended notice of this book seems scarcely called for, inasmuch as the results of Ch. Bouchard's researches, as well as those of M. Charcot and Dr. Bastian, have already been laid before our readers in different forms. It is sufficient to say, that further investigations have only served to convince the author of the correctness of his opinion, that cerebral hemorrhage depends, in the great majority of instances, upon the rupture of miliary aneurism, and that these take their origin in a loss of elasticity of the minute arteries induced by peri-arteritis, or sclerosis of the arteries, in which connective tissue seems to be developed at the expense of the muscular coat. M. Charcot and himself have collected eighty-four cases of apoplexy, in all of which there were miliary aneurisms found. On the other hand, atheroma of the vessels is by no means a frequent condition in the bodies of those who have succumbed to cerebral hemorrhage, having been found only in about 22 per cent. of the cases examined. Heschl, moreover, has found that these aneurisms are rare before 40; but that after this age the rate of their development is a gradually increasing one; or, in other words, that their frequency according to age, bears a close relation to what we know of the frequency of cerebral hemorrhage at different periods of life. They are, moreover, rarely found except in brains which bear the evidences of old or recent extravasation of blood. They are not, as was at one time supposed, confined to the brain, M. Liouville having recently found them on the minute arteries of the œsophagus.

The translator, excepting that he has allowed a few unimportant typographical errors to escape his notice, has done his work well, and deserves the thanks of the profession for having placed this valuable work within its reach.

Four plates, one of them coloured, illustrating the aneurismal dilations of the arteries, and a paper by the author and M. Charcot, which originally appeared in the "Archives de Physiologie," are appended in this volume to the original thesis.

J. H. H.

ART. XXIX.—*A Handbook of Post-mortem Examinations and of Morbid Anatomy.* By FRANCIS DELAFIELD, M.D., Curator to Bellevue Hospital, etc. 8vo. pp. 368. New York: Wm. Wood & Co., 1872.

WE are informed in the preface to this neat volume that it has been written as a guide for "those persons who may be called upon to perform post-mortem examinations. To most physicians this call is only an occasional one, so that they may feel the need of some handbook to which they may refer."

The book is divided into four parts. The first is devoted to the examination of the adult and newly born. The latter is an original subject to manuals of this kind, and makes a valuable addition thereto. The second part is the most voluminous, occupying the greater portion of the book, and is devoted to the morbid anatomy of the separate organs. The lesions of general disease, the effects of poisoning, and of violent death form the third part; while the fourth is devoted to an outline of the modern classification of tumours. The section upon the method of making post-mortem examinations has upon the whole failed to meet our expectations. The young practitioner, when required for the first time to dissect the visceral cavities, is brought face to face with a problem of which little or nothing has been said during his pupilage, and the dissecting room afforded him no opportunities of observation worthy of the name. The shrunken, altered tissues, with the arteries, it may be, filled with plaster, give a very inadequate idea of the parts when seen in a fresh condition. He learns no rules of operation, and would naturally expect to find in a handbook, such as the one before us, the guide he needs. He has a right to insist that an autopsy should be conducted with the same eye to method as on the living subject, and to find, in books handed him for the purpose, fixed and detailed directions for each manœuvre. A glance at our author's language shows that he has failed to do this satisfactorily. Thus, under his remarks upon the examination of the brain, he says:—

"The two halves of the cerebrum are to be gently separated until the superior surface of the corpus callosum is exposed. An incision is made through the junction of the corpus callosum and cerebrum cutting outward and downward into each lateral ventricle . . . The incision thus made through the roof of each ventricle is prolonged backward and forward in the direction of the cornua, until the entire cavity of each lateral ventricle is exposed. A long incision outward and downward is then made into each half of the cerebrum, from the outer edge of the lateral ventricle, nearly to the pia mater. A second incision is then made from this cut surface outward, and this is repeated until the cerebrum is divided into a number of long prismatic-shaped pieces held together by the pia mater. The velum interpositum is then dissected up, and the fourth ventricle opened. To complete the examination cross sections are made through all the large ganglia, the medulla, and the cerebellum. Care must be taken not to overlook small clots in the medulla oblongata."

This is defective we hold in omitting to mention that the brain when removed should be supported at the sides to prevent the outward strain lacerating the deep structures. The middle commissure of the third ventricle can in this way be easily torn, and in softened conditions of the brain other parts may suffer. It is also defective in not insisting upon the measurement of the fluid found in ventricles, and in the general directions of dividing the brain. For those given we would suggest something like the following: The incision into the lateral ventricle should be made not through the point of junction of corpus callosum with the cerebrum, but through the tissue of the cerebrum itself. Indeed, the best incision, though one requiring some skill to perform it, is a vertical one

made from the vertex of the brain about six lines to the outer side of the great longitudinal fissure. The lateral sinus being opened a syringe which is furnished with a long nozzle is used to withdraw the fluid, which should be carefully examined and measured. The lateral ventricle of the other side should be treated in the same manner. A long narrow knife is now passed through the foramen of Monro, and the corpus callosum and fornix at that point divided. These parts are now turned back to display the cavity of the third ventricle, which is thus unroofed, while the striated bodies and optic thalami are displayed along their entire lengths. The velum and the pineal gland are next examined, and the greatest care taken not to injure the latter body, which is frequently endangered by incautious handling of the velal tissue. A director is now passed from the third to the fourth ventricles—and the superincumbent parts divided. The hemispheres of the cerebrum may be next removed, saving the island of Reil from incision, which naturally belongs to the striated body of which it is a convolution. The examination is completed by making sections of the medulla, pons, optic thalami and striated bodies preferably in longitudinal rather than in transverse directions, since the former preserve relations, the latter destroy them.

Under the head of the thorax our author gives the following directions for opening the chest: "With a costatome or strong knife the costal cartilages are divided close to the ribs, the clavicles are disarticulated from the sternum, and the latter removed, taking care not to wound the large veins." This is about as definite as the following "rule" for amputation: Remove the affected limb at the point of selection and ligate the vessels; a correct rule enough but not a very useful one. Every one familiar with post-mortems knows that it requires a skilful hand to disarticulate the sternal end of the clavicle neatly. Attempts at its performance are chiefly responsible for the nicked and pointless knives of a hospital post-mortem case. The division of the first inter-costal cartilage by an oblique incision from below upwards and inwards is an aid to its easy performance, as it allows the knife to open the capsule at the lower edge of the sternal facet. Who has not seen the innominate veins opened by a bungling effort at severing this articulation and the subsequent smearing of the pleural cavities, disguising the appearances the observer is seeking, staining the serum or pus that may be present, and misleading him in his conclusion of the degree of venous stasis not only within the head but thorax and abdomen as well? Nor is it always necessary to effect the disarticulation. In young adults, and sometimes in older subjects, the sternum can be divided transversely about the line of the middle of the second costal cartilage.

We heartily commend the examination of the abdomen before removing the thoracic viscera, but are surprised that no directions are given to describe the organs of both cavities *in situ* before disturbing them. Indeed, in performing autopsies in private life it is well to avoid removing organs from the body as much as possible. With the exercise of a little care many of the viscera can be thoroughly examined, and portions removed for minute study, without taking the organs themselves from the body. We would feel inclined to supplement our author's remark that each lung is to be lifted up in turn, "the vessels, etc., at its base divided, and the organ removed" by saying—provided it be thought necessary to open the bronchi along their entire length, or when it is desired to preserve the lung as a specimen. But if the object be to examine the general appearance of the parenchyma of the lung as in pneumonia and phthisis, do not disturb the root of the lung, but, using it as a point of attachment, raise the lung from its bed, and by inserting a towel or sponge in the pleural cavity the

organ can be placed in a good light; held firmly in a convenient position for such measurements or incisions as may be thought necessary. Neither is it always requisite to remove the heart. The pericardium should be carefully opened, a syringe used to remove the serum, and the measurements taken, the clots removed, etc., without disturbing its position. Should, however, it be deemed necessary to learn the weight of the organ, or the condition of the valves, it must be removed. In making the incision to display the semilunar valves of the pulmonary artery (which are here oddly termed the "pulmonary valves"), we have no directions given us, but are informed that the incision may be made to pass through one of the points of juncture "with a little care." Now the "little care" simply consists in inserting the finger from the right ventricle up along the pulmonary artery until the anterior of the three corpora Arantii is felt by the finger; a pair of blunt-pointed scissors may now be passed upward along the fingers and the valve divided at the "point of junction" with certainty.

In the event of disease involving the entire respiratory tract, or when the lesion is one requiring careful dissection, as, for example, in thoracic aneurism, the better plan after the parts have been carefully studied in position is to remove them as far up as the hyoid bone, and eviscerate the thoracic cavity together with the trachea and larynx. This can be easily effected by making a vertical incision through the skin along the median line of neck (the sternum having been previously removed), and the soft parts roughly dissected to the side. A second incision is now made above the hyoid bone through to the vertebral column. The trachea is now seized with one hand and pulled downward toward the thorax, the knife being held in the other to divide the great vessels at the root of the neck. Below this there is no obstruction to the easy separation of the base of the lungs, the trachea, and œsophagus, and the evulsion of the entire contents of the thorax out over the abdomen, where it is now held only by the pericardial attachment to the diaphragm, the aorta, and œsophagus. In this position the relations can be satisfactorily studied, and the organs may be restored if it be required; or, if it be permitted, can be removed by severing the attachments above mentioned.

Other examples might be cited showing, as we think, that too much knowledge of method on the part of the operator has been taken for granted, and too little of the author's knowledge has been given in the method presented.

There is a capital résumé of the varieties and position of thrombi, on p. 305, and of thrombosis of the portal vein on p. 187, and of a curious case of thrombosis of the superior mesenteric vein from perforation of the vessel by a fish-bone, which had probably effected its escape from the stomach near the pyloric orifice. Another case of thrombosis of portal vein from a similar cause is detailed.

We would be doing injustice to this valuable addition to our literature to omit mention of the careful descriptions of the morbid condition of the viscera, as shown in the sections on ruptures and wounds of arteries, on peritonitis, and on the morbid conditions of the liver.

H. A.

ART. XXX.—*The Microscope and Microscopical Technology, a Text-book for Physicians and Students.* By Dr. HEINRICH FREY, Professor of Medicine in Zurich. Translated and edited by GEORGE R. CUTTER, M.D., from the fourth and last German edition. 8vo. pp. 658. New York: Wm. Wood & Co., 1872.

THIS work of Prof. Frey, long favourably known by all students of German medical literature, will doubtless, in its English dress, be welcomed by the pro-

fession as an acceptable addition to our standard works on the subject. In endeavouring to estimate its merits we must always keep in view that it is supplemented by other German works which discuss in greater detail points only superficially treated of or altogether untouched upon in the present work ; thus, the well-known work of Harting is calculated to fill up the many gaps left in the consideration of the optical portion of the subject, while that of Dippel supplies us with a good account of vegetable histology, a subject not mentioned by our author. Indeed, in his preface he informs us that he looks upon his work as "concise" and "especially adapted to the practical wants of a medical man."

The work is divided into twenty-two sections, and of these the first four are devoted to a consideration of the optical principles involved in the construction of the instrument and of its accessories and of the methods of testing the latter. In treating of diaphragms the author gives the preference to cylindrical diaphragms over the rotary ones, which, on account of the convenience and rapidity with which one aperture may be substituted for another of different diameter, are almost exclusively employed in American and English instruments. He states, and we think justly, that it permits of finer gradations of illumination, but entirely omits to notice the effect produced by carrying it nearer to or removing it further from the object, according as we employ either convergent or divergent light. The relative advantages of central and oblique illumination and the subject of achromatic condensers are summarily dismissed in a few lines, without even a word on the principles of the construction of the latter, whether it is desirable that they should, as in most of our microscopes, be focussed on the object, or whether, as in the apparatus of Harting and others, their construction should admit of their being so used as to deliver parallel rays. We think that this must be a subject of regret to every thoughtful student, inasmuch as the successful use of the instrument is so dependent upon our knowledge of the principles involved in its construction, and we have all repeatedly seen how an accomplished microscopist can with a moderate power and suitable illumination demonstrate minute details in the structure of objects which the beginner can only satisfy himself of laboriously and by the use of much higher powers.

The account given of microscopic photography is also exceedingly insufficient; no allusion whatever being made to the most ordinary practical difficulties which stare every beginner in the face at the outset, as, for example, the fact that ordinary microscopic objectives are not achromatic (being either over or under corrected) and that consequently their actinic and visual foci do not coincide. Of course, therefore, the methods of overcoming this defect by monochromatic light, etc., are also passed over in silence. The author credits our countryman Riddell, with the production of the first binocular microscope, but evidently does not set a very high estimate on the practical utility of these instruments, and at page 51 says: "Opinions are divided with regard to the utility of these instruments; they have certainly been overestimated by many. We must leave it to the future to decide whether science is to derive any benefit from them." On the other hand, he maintains that the use of polarized light in the examination of tissues has a high scientific value in bringing out molecular relations which in ordinary light entirely escape notice, although, as he kindly informs us, the interpretation of the phenomena is often difficult, and the ignorance of medical men in the domain of optics great. The chapters treating of preservative fluids, chemical reagents, staining tissues, metallic impregnation, injections, etc., are exceedingly satisfactory and to the point. We can only regret that he has not discussed more in detail the staining with hæmatoxylin and the hardening of tissues by freezing. His remarks on the so-called

"indifferent media," showing the destructive effect of water on tissue, and that all substances which have really any claim to be so considered must contain both crystalline and colloid substances, are admirable.

In giving directions for imbedding objects preparatory to making sections of them, he gives four methods, viz. : 1, in gum ; 2, in wax and oil ; 3, in paraffine, and, 4, in glycerine and gelatine. He, however, simply melts his paraffine, and makes no mention of the advantages derived by thinning it with either benzine or paraffine oil, and thus rendering it less hard and brittle. In mounting objects our author recommends highly Canada balsam, and thinks both gum damar and mastic "superfluous," "only to be used here and there by way of experiment."

In the chapter on "Epithelium, Hair, and Nails," we have a good wood-cut of the so-called "stachel" or "riff" cells, that is, cells in the lower and consequently younger and softer layer of epithelium, which are ridged or toothed at their margins and fit into one another as one cogwheel into another. Strange to say, however, there is no hint of the possibility of their being artificial productions caused by the action of the menstrua used in examining them.

In speaking of connective tissue Prof. Frey mentions "that Ranvier has made us acquainted with a useful method of examining tendinous tissues," and instances his investigations of the thin fibres obtained by tearing the caudal vertebræ of young rats from their tendinous attachments, but expresses no opinion on, and indeed gives no account of, the views which he has advanced concerning the structure of tendon and the cells of connective tissue. The chapter on muscles and nerves is one of the most interesting and complete in the book. There is no department of histological investigation which has of late years been more assiduously cultivated by able observers than that treating of the minute structure of nerves and muscles, and certainly there are few points more difficult of demonstration than the final ending of nerve fibres in muscle (both striated and unstriated). The *résumé* which is given of the present state of our knowledge on the subject, and the wood-cuts illustrating it, will therefore not fail to attract the attention of the reader. The defects of the chapter are those inseparable from the general plan of the work, and shared therefore perhaps in a higher degree, by all others treating of the structure of tissue. Touching as they necessarily do at almost every page on the most intricate and extended inquiries in the domain of histology, pathology, and organic chemistry, the reader has unavoidably at times a sense of dissatisfaction from the bare allusion or the summary curtailment and dismissal which the author is obliged to resort to in order to keep within the limits which he has mapped out for himself in his work.

The extended field occupied by the remainder of the work, *e. g.*, vessels and glands, the digestive, urinary, respiratory, and sexual organs, the organs of special sense, offers an almost inexhaustible opportunity for criticism and comment. We believe, however, that enough has already been said to show the value and scope of the work ; although we have pointed out what we consider defects in it, we are nevertheless convinced that every microscopist will find it a pleasant and instructive addition to his library, and would cordially recommend it to every one interested in the study of minute anatomy.

Dr. Cutter as translator has done his work very creditably, and the book will compare well in this respect with many of the translations with which the medical public have recently been favoured. Where he errs it is on account of a too literal rendering of the text, thus, *e. g.*, at page 40 we find, speaking of drawing microscopic objects, "It should not be forgotten to lay in the shadows symmetrically on the right side, as it is only thus that elevations and depressions can be

brought forward in the picture." We venture to say that nine readers out of ten not having the original before them, would suppose that Prof. Frey intended the shadows in all drawings to be placed on the *right-hand* side; whereas he simply directs that the shadows should be laid in carefully in their proper place so as to render faithfully the elevations and depressions of the image (picture). Again, at p. 251 we find mention of a "Pravaz syringe," and think few readers would recognize in it the equivalent of what is familiar to every medical reader as a syringe for subcutaneous injection; moreover, Dr. Cutter insists throughout the book on calling magnifying glasses and simple microscopes "loups."

Some of the additions made by the translator will be most acceptable to the American reader; e.g., pp. 81-86, "A History of the Microscope as an American Instrument;" pp. 112-117, a description of Dr. Edward Curtis's section cutter and his method of imbedding and cutting tissue, which is one of the most satisfactory with which we are acquainted.

In conclusion, we find at the end of the book a price list of many of the most prominent microscope makers, but are rather surprised that in the list of English makers, while Pillischer and Baker are mentioned, not a word is said in regard to either Powell and Lealand, or R. & J. Beck. W. F. N.

ART. XXXI.—*A Manual of Histology*. By Prof. S. STRICKER, of Vienna, Austria, in co-operation with TH. MEYNERT, F. VON RECKLINGHAUSEN, MAX SCHULTZE, W. WALDEYER, and others. Translated by HENRY POWER, of London; JAMES J. PUTNAM, and J. ORNE GREEN, of Boston; HENRY C. ENO, THOS. E. SATTERTHWAITE, EDW. C. SEGUIN, LUCIUS D. BULKLEY, EDW. L. KEYES, and FRANCIS E. DELAFIELD, of New York. American Translation edited by ALBERT H. BUCK, Ass't Aural Surgeon to the New York Eye and Ear Infirmary. With 431 Illustrations. 8vo. pp. 1106. New York: Wm. Wood & Co., 1872.

THE enterprising New York publishers of this valuable work have issued in a single volume the entire treatise edited by Stricker. This edition contains, translated by Americans, not only the special senses, which are the subjects of Vol. III. of the New Sydenham Society's edition, but also the matter of Vol. II. of Mr. Power's translation.

Having already noticed the contents of Vols. I. and II. of the New Sydenham Society's edition, we will confine ourselves to the remaining subjects.

Chap. XXXIV., on the *Organ of Taste*, is by TH. W. ENGELMANN, of Utrecht, and is translated by A. H. BUCK. Most interesting and important is the description of the *taste-buds* (Geschmacksknospen), *taste-bulbs* (Geschmackszwiebeln), or *taste-beakers* (Schmeckbecher), as they are variously called. These are described as occupying cavities in the epithelium of the mucous membrane of the tongue, fitting them perfectly at every point. They are found more particularly in most sensitive (as to taste) parts, as the upper surface of the root (especially the circumvallate papillæ), the edges and tips of the tongue, and probably the anterior portion of the soft palate.

Chap. XXXV., *The Organ of Smell*, by Prof. BABUCHIN, is translated by FRANCIS E. DELAFIELD. We were much confused and delayed in our understanding of the first part of this chapter by an evident transposition of the text descriptive of fig. 304 to fig. 303, and of that of 303 to 304. If this transposition occurred

in the original, which we have not now at hand, it should not have escaped the observation of the translator, while if the error is peculiar to the translation it is even less excusable.

The organ of smell, as may be said of all the organs of special sense, is composed of three component parts—(a) the apparatus which appreciates odours; (b) the conducting apparatus, and (c) the central organ to which the sensations of smell are transmitted by the conducting apparatus. So, also, the first part, the apparatus which appreciates odours, as that of which the minute structure is most complex and most recently appreciated, is the most interesting. This, as well as a part of the second, is imbedded in the mucous membrane, known as the “regio olfactoria,” which, in the higher animals, covers the upper and deeper portions of the nasal cavity.

Max Schultze is accredited with having laid the foundation of a correct knowledge of the histology of this region. This is covered in the lower animals (frog) with a thick layer of the so-called “Bowman’s glands”—follicular glands, having constricted orifices and lined by round or polygonal cells. These, according to Kölliker, are replaced in man by the ordinary mucus-glands, but, according to Schultze, those in man represent transition forms suggesting Meibomian glands. Schultze has also found racemose mucus-glands in the human olfactory region. Imbedded in the connective tissue between these glands are bloodvessels and branches of the olfactory nerves.

Thus far, the structure of this region is well determined, but beyond this, there would appear to be as much uncertainty in the actual knowledge as there is obscurity in the language used by the author to describe it.

Chap. XXXVI., *The Organ of Vision*, by MAX SCHULTZE and others, is a masterpiece. It is translated by HENRY C. ENO. Schultze makes ten layers of the retina, which, passing from within outwards, he names as follows: 1. Membrana limitans interna; 2. Layer of optic nerve fibres; 3. Layer of ganglion cells; 4. Internal molecular layer; 5. Layer of internal granules; 6. External molecular (intergranular) layer; 7. Layer of external granules, including the external fibrous layer which exists in certain portions of the retina; 8. Membrana limitans externa; 9. Layer of rods and cones; 10. Pigment layer.

The *Bloodvessels of the Eye* are treated by TH. LEEBER, the *Lymphatics* by G. SCHWALBE. Consistently with recent advances in our knowledge of the lymphatic system, the eye has been found to furnish abundant channels and spaces for the conveyance of the lymph derived from its various tissues, some of which are highly vascular. Prof. A. IWANOFF treats of the *vitreous body*, the understanding of which is seriously interfered with by the absence of all illustrations, a deficiency which is by no means confined to this portion of the volume. According to the author there is no distinct capsule for the vitreous, no “membrana hyaloidea,” so-called, though in front the tissue of the vitreous is condensed to form a limiting layer, the posterior wall of the canal of Petit.

The structure of the *Lens* is successfully displayed by Prof. BABUCHIN, whose paper is well illustrated. So also is that of ALEXANDER ROLLETT, on the *Cornea*, which furnishes a complete account of this important tissue. The histology of the cornea should be familiar to every medical man whatever the subject of his special interest, since it has been made the seat of almost all important observations on the nature of inflammation.

The following layers of this structure are made by the author:—

1. The external epithelium of the cornea, a flat laminated epithelium.
2. The true corneal tissue.
3. The membrane of Descemet, a sharply defined homogeneous appearing membrane.

4. The endothelium of the membrane of Descemet, a single layer of flattened cells.

The *Conjunctiva and Sclerotica* are by STIEDA, STRICKER, and KLEIN. The manuscript of the first named is lengthened by Stricker, and the subject is admirably illustrated with drawings by Klein.

The *Lachrymal gland* is treated by FRANZ BOLL. Agreeing in all essential points of structure with the salivary glands, it requires no extended note from us. J. T.

Chap. XXXVII. is on *The Organ of Hearing*.

I. *The external and middle ear exclusive of the Eustachian Tube*, by J. KESSEL. The author in a few introductory remarks divides, according to the almost universal opinion held at present, the entire organ of hearing of the higher vertebrates into a sound-conducting and a sound-perceiving apparatus, classing under the percipient elements the entire inner ear, *i. e.* in the vestibule, the semicircular canals, and the cochlea. Whether such a division can be much longer maintained, we will not stop to inquire.

Nothing new is added concerning the auricle and external meatus. The distribution of the vessels in the fibro-cartilages should have received more careful study.

The theme of the *membrana tympani*, however, has been thoroughly elaborated and constitutes the bulk and most valuable part of Kessel's paper.

Most readers will find new to them the description of the *peculiar bodies* resembling a Vater's corpuscle with their concentrically arranged capsules, which exist more or less numerous in the submucous connective tissue of the tympanum and mastoid cells. An axis band runs through the centre of these lemon-shaped bodies, which immediately after its exit spreads out fan-shaped into the adjacent tissues. Kessel was the first to describe these bodies as existing in the normal healthy ear, but their precise physiological function still remains to be determined. Having had the opportunity of verifying the author's preparations, we take pleasure in testifying to the accuracy of his description and delineation of these bodies.

In the description of the ossicles and their muscles, we miss all the more an accurate account of the several articulations and the relations of the muscles to the ossicles, since these points have acquired great interest through recent investigation. A more detailed account of the relations of the mastoid cells in the various stages of development of the petrous bone might have been safely given, since a precise knowledge of them would be of great importance to pathological studies.

II. *The Eustachian Tube*. III. *The Membranous Labyrinth*, by Prof. RÜDINGER. His earlier publications and labours in this direction have eminently qualified the author for the performance of the task assigned to him. It is rendered one of the most attractive chapters of the entire volume by the perspicuity of the language employed and by the exceptional liberality with which Stricker has allowed it to be illustrated.

Throughout this chapter the reader will find many new and valuable contributions to the comparative microscopic anatomy.

IV. *Auditory Nerve and Cochlea*, by W. WALDEYER. Any reader desirous of studying the complicated structure of the organ of Corti with the ultimate terminations of the auditory nerve, will nowhere find a more reliable and complete treatise than this of Waldeyer.

The several papers upon the organ of hearing have been conjointly translated by J. ORNE GREEN, T. E. SATTERTHWAITE, and ALBERT H. BUCK. It is appa-

rent, from the excellent manner in which they have performed their work, that they have entered into it *con amore*.
R. M. B.

ART. XXXII.—*A Treatise on the Principles and Practice of Medicine; designed for the use of Practitioners and Students of Medicine.* By AUSTIN FLINT, M.D., Prof. of the Principles and Practice of Med., and of Clin. Med. in the Bellevue Hosp. Med. Coll. Fourth edition, carefully revised. 8vo. pp. 1070. Philadelphia: Henry C. Lea, 1873.

It is unnecessary for us to do much more in reference to the present edition of this work than to call attention to its issue, and to state that some portions of it have been rewritten, and numerous additions made throughout the volume, amounting in all to about seventy pages. These alterations are pretty well distributed, but the most important of them are included in the chapters relating to general pathology, to nervous and renal diseases, and to fevers. In the first of these are discussed the important subjects of tubercle, embolism, and thrombosis, and septicæmia. In the second we find an account of aphasia, pachymeningitis, spinal meningitis, cerebritis, and myelitis; in the third, of hydronephrosis and abscess of the kidney; and in the last much new matter appears under the heads of relapsing fever, vaccine, and rheumatism.

In all these additions, as in the original text, the author has known how to combine fulness of detail with conciseness of style, to distinguish between fact and probability, and to avoid that positive and dogmatic tone which is most strongly developed in the writings of those who have least claim to employ it. The higher one rises towards absolute truth, the more remote does it appear; and the less is one disposed to criticise the ignorance and self-assertion of those whose life is on a lower level. Our author has so much of his own to communicate that he concerns himself but little with a criticism of views from which he dissents or of opinions that he condemns. The reader who seeks for a plain, clear, succinct, yet full account of diseases and their treatment, cannot do better than study this volume, which probably contains a greater amount of truth, and is disfigured with fewer errors, than any treatise of its kind.

As in former editions, so in this, the articles are of unequal merit; and yet we think that the inequality is less conspicuous than before, a fact, if it be one, which speaks for the author's more enlarged and more critical and personal study of the subjects of which he has treated. If we were to characterize his genius we should call it clinical in opposition to critical; and while feeling implicit confidence in his own observations and his conclusions from them, we cannot hold his judgment of the facts and doctrines of others in equal esteem. To expect a medical author who is also immersed in the details of an onerous practice to be equally distinguished in both fields is, perhaps, to look for the impossible.

One article, that on relapsing fever, may be taken to illustrate this estimate, for although the author had some opportunity of studying the disease, we cannot regard his account of it as satisfactory. It does not indicate an acquaintance with the literature of the subject, which would have prevented several errors of statement, such as, that "relapsing and typhus fever are apt to prevail together;" that "there are no distinctive morbid appearances found in the rare cases that prove fatal;" that "it is not a highly contagious disease;" that "destitution, deprivations, and especially deficient alimentation,

are powerful predisposing causes," if this means especially predisposing to relapsing fever; that "the comparatively much greater fatality of typhus and typhoid fever is due mainly to complications," etc. So, in the article on cerebro-spinal meningitis, we observe it stated that a certain opinion was held by the author "under the belief" that the epidemic disease of 1807 and 1816 was identical with epidemic meningitis. This is no more a matter of "belief" than that the smallpox of Rhazes is the smallpox which Dr. Flint so well describes. We cannot avoid calling attention to the implied approbation which our author gives to the use of digitalis, aconite, and veratrum viride in inflammation and even in typhoid fever. We say "implied" approbation, because he does not produce any evidence to recommend it, drawn from his own experience. And we are fain to inquire how approbation expressed or implied, qualified or absolute, can be given to such a plan by an author who also declares, and most truly, that "the importance of support is based on the plain fact that, typhus and typhoid fever being self-limited diseases, if the patient can be kept alive, after three, four, or more weeks, recovery must take place, provided there be no serious complication." (p. 903.) And we should also be glad to learn how the "restorative system," which in one shape or another is that of Dr. Flint as well as of other practical men, can be carried out in patients drugged to the very verge of death with aconite, veratrum, or digitalis.

We have felt bound to point out these things which appear to us blemishes in a work of great merit, and the more so because they are, comparatively, surface stains which do not seriously impair its value, nor detract from the high esteem in which we hold its solid and compact knowledge, and the sober judgment and fruitful labours of its distinguished author.

A. S.

ART. XXXIII.—*The Diseases of the Stomach. Being the Third Edition of the Diagnosis and Treatment of the Varieties of Dyspepsia.* Revised and Enlarged. By WILSON FOX, M.D., Physician to University Coll. Hosp., etc. 8vo. pp. xii., 236. London and New York: MacMillan and Co., 1872.

In preparing the third edition of his work on *the Diagnosis and Treatment of the Varieties of Dyspepsia*, the author has enlarged it by the addition of several of his contributions on analogous subjects to Reynold's *System of Medicine*. The most important of these are the articles on *Ulcer and Cancer of the Stomach*. The book has therefore additional claims to be considered a complete treatise on diseases of the stomach. It is nevertheless still imperfect in some respects. A few remarks on the physiology of the stomach would not have been out of place in a work of this character, and, we think, our author would have done well to have followed Dr. Fenwick's example in giving them a prominent position. The latter has, moreover, pointed out more clearly than the former the changes which the digestive organs undergo in general diseases, and has also very distinctly shown that in certain cases of Bright's disease there is marked disease of the glands of the stomach. Dr. Fox, it is true, alludes to this, but not in a way to arrest the reader's attention. There is every reason to believe that, in many instances, the alterations in the coats of the stomach occur *pari passu* with those in the kidney, and that they are only parts of a constitutional derangement which may require very different treatment from that which would be appropriate in a local disorder.

The author devotes a large part of his book, fifty-six pages in all, to some

general remarks on the symptomatology of the stomach, and these, as well as the chapters on the various forms of dyspepsia which follow, our readers will, we are sure, find of value. Dr. Fox has certainly done much towards removing the difficulties which surround the diagnosis of the causes of dyspepsia, and has succeeded in defining clearly the conditions of the stomach in which the indigestion of food arises. His treatment is, moreover, judicious, and the practitioner who has exhausted the usual remedies, may refer to this book with the certainty of obtaining a useful hint. The chapters on ulcer and cancer of the stomach, although not equal to those we have just been considering, are carefully written and contain very full reference to the observations of others on these subjects down to the present day. And the student of these and other diseases of the stomach will find his labours very much lightened by consulting the footnotes which are freely scattered throughout the volume.

The book is remarkably free from typographical errors, but there is one which the author has allowed to escape his notice. On page 10 he speaks of tympanitis instead of tympanites.

The changes in the gastric tubes in cases of acute and chronic catarrh are well shown in two plates which accompany the volume.

J. H. H.

ART. XXXIV.—*Hand-book of Medical Electricity.* By HERBERT TIBBITS, M.D., L.R.C.P. Lond., Medical Superintendent of the National Hospital for the Paralyzed and Epileptic, Medical Officer for Electrical Treatment to the Hospital for Sick Children, Great Ormond Street. With sixty-four illustrations. Small 8vo. pp. 164. Philadelphia: Lindsay & Blakiston, 1873.

VERY often there are a few central paragraphs in a book which give prompt insight as to the aims with which it is written and about which the bulk of the work is clustered. The following are illustrations in the volume under consideration:—

“The almost complete absence in the medical schools of the great hospitals, of opportunities for an adequate study of electro-therapeutics, the importance of the subject, and the widespread attention that it is awakening throughout the profession, have determined me to sketch, as briefly as is consistent with clearness, the present position of the science and practice of medical electricity, and especially of its practice.”

Also:—

“There is too much belief and too much unbelief in the therapeutic power of electricity. The men who estimate it fairly are quite the minority. It is generally either much undervalued, or else believed to be a sort of modern elixir vitæ, capable of curing a hopeless hemiplegia from destruction of brain tissue, or a paralysis agitans from senile degeneration. Although it will do neither of these impossibilities, yet, considered as a remedy, it is of great value in a wide margin of diseases.”

The aim of the author, in affording a handbook for general practitioners, has been satisfactorily attained, and his views concerning the general estimate placed on electricity as a remedial agent are, we think, very just. In addition to particular directions for the use of electricity in certain diseases, the work contains an interesting description of Dr. Radcliffe's special method of electrization, the merits of which method may be regarded as still under trial.

To our own medical men the work would be more serviceable if it contained

a description of the best electrical instruments of domestic manufacture, but without this, it is yet worthy of a place in the library of every American physician.

F. A. B.

ART. XXXV.—*Smithsonian Contributions to Knowledge*, 241. *A Contribution to the History of the Fresh-water Algæ of North America*. By HORATIO C. WOOD, JR., M.D., Professor of Botany and Clinical Lecturer on Diseases of the Nervous System in the University of Pennsylvania. 4to. pp. viii., 262, 21 coloured plates. Washington, 1873.

THE young physician who has a microscope and a wish to use it (leisure may be taken for granted), will find that this book will enable him to commence the study of the algæ with good prospect of success; and if he will consider the information to be derived from Dr. Wood's work as merely the alphabet of the matter; that is as giving the characteristic modes of growth and reproduction of the several genera, and enabling the student to identify the forms which he will commonly meet; and will then carefully work out some of the numerous problems presented in the development of a few species, "looking beyond his microscope," he will find that his time has been well spent.

In the algæ may be studied cell growth and multiplication in their simplest forms; and the phenomena of life may be watched without the need of complicated apparatus and tedious dissections. There is no more certain method of increasing the height of the pyramid of medical science than by extending its base; and no field promises more to the physiologist and the physician than that of cryptogamic botany. Thus far it has for the most part happened that those who have called attention to the possible connection between these lower organisms and the science of medicine, have not allowed the want of material to prevent their building, and the result has been the reverse of stability.

Before deciding that certain small green cells are the causes of disease, it may be well to learn something about them; whether they may be young moss cells or gonidia of a collema; botrydium, chroococcus, or a palmella, all of which have within our own knowledge been taken for the ague plant, and any of which will in certain stages correspond sufficiently to the original description of that famous organism.

Dr. Wood's work furnishes to American microscopists the necessary foundation for further investigations, and it is greatly to be regretted that no similar work exists for the minute fungi.

The plates are well drawn and coloured, and are of more value than many pages of description, as means of identification of forms. The magnifying power is given for each figure; but it would have been more convenient had the three or four scales used been placed on each plate. The work is commended to all practical microscopists as a valuable book of reference. J. S. B.

ART. XXXVI.—*Lessons in Elementary Anatomy*. By ST. GEORGE MIVART, F.R.S. Lecturer on Comp. Anat. at St. Mary's Hospital, etc. 12mo. pp. xxvi., 535. London: MacMillan & Co., 1873.

THE design of this book is to present anatomy in a shape which will enable the medical student and the general reader to gain an insight into the structure

of animals. It is in fact a handbook of comparative anatomy. The author divides the work into lessons, as follows: The general review of the subject; the skeleton in general; the skeleton of the head; the upper limb; the lower limb; the internal skeleton; the external skeleton, including the teeth, feathers, etc.; the muscles; the nerves and organs of sense; the organs of circulation; the alimentary organs; and the excretory organs; thus making twelve lessons. They are of varying length, and the amount of space devoted to the skeleton is fully one-half of the entire volume. This predominance has been deliberately assigned, we are informed, for the following reasons: (1) The general resemblance borne by the skeleton to the external form; (2) The close connection between the arrangement of the skeleton and of the nervous system, muscles, and vessels; (3) The relations borne by the skeleton of each animal to the actions it performs, *i. e.*, to the mode of life, and habits of the various animals; (4) The obvious utility of the skeleton in classification, and interpretation of affinity; (5) Parts of skeletons, or casts of such, are all we possess of a vast number of animals formerly existing in the world but now entirely extinct.

The language of the author is generally clear and aided by copious illustrations—there being 410 wood-cuts, most of them originals, interpolated through the text.

Of the author's claim to consideration there can be no doubt. He is known as an original investigator of the higher groups of Vertebrates, and the proposer of an ingenious modification of the accepted theory of the vertebrate skeleton. But with all due deference to his authority we cannot but believe that the amount of space occupied by the osseous system is too large, and his method of presentation of many of his facts, both here and elsewhere, is not the best. Thus the consideration of the teeth, among the parts of an external skeleton, we hold to be faulty. The homological relations they may have to the proper dermal outgrowths do not compensate in our opinion for the enormous disadvantage the student labours under in studying the dental system apart from the alimentary canal—all its physiological relations are with the latter. Mr. Mivart would apparently have us enumerate the teeth among the bones of the human skeleton. Indeed there is too little attention given to the relation of structure to function throughout the book. We read among the remarks on the digestive organs that "the stomach (in animals) may be very much shorter than in man; and indeed, its depth may exceed its length, as is the case in the *Ornithorhynchus*, and some Insectivora, *e.g.*, *Rhynchocyon*. It may be also globular, as in the fish *Mormyrus*." Nothing unites these remote and very dissimilar forms but the short longitudinal diameter of the stomach, which is surely an unimportant fact. There is scarcely an intimation, anywhere in the lesson on the alimentary system, of the correlation between the structure of the digestive tract and the kinds of food consumed.

In the section on the Circulation, the absence of comment, on the relations between the conformation of the heart and the character of the circulation, is particularly noticeable. We may premise that the chief object of a demonstration of the cardiac series is to indicate that the differences between the kinds of bloods have something to do with the hearts themselves. The structure of the heart of the fish indicates a venous character of the cardiac blood, that of the batrachian and reptile for the most part a mixed character, that of the bird and mammal a complete separation of two currents, a venous and an arterial. Certain structures of the heart of air-breathing types, such as the *ductus arteriosus* and the *foramen ovale*, are of primary importance in such a demonstration; and in our judgment no "elements" of instruction can properly omit some mention of them. Yet in our author's description of the human heart

and great vessels nothing is said of the *ductus arteriosus*; nor is the foetal circulation in man described with a view of aiding the student in comprehending the heart having a mixed blood.

We may take exception to the assertion that the dental arch is interrupted in all living mammals below man excepting the lemur *Tarsius*; some of the bats having the same peculiarity. Nor can we accept the use of the word "beast" to small mammals—as when he speaks of apes and "other beasts as the hedge-hog." He appears to apply the term to all the mammals—seeking, perhaps, in the vernacular for a word expressing a milk-yielding quadruped. We believe that most readers would prefer its application to those animals used by man for "food, labour, or support." The use of the term "Ape" is also here seen in a decidedly exceptional way—for, instead of restricting it to the old world forms, it is given to the new world as well.

The attempt to write for two distinct classes of readers may explain some of these features of the volume. It is not for us to reflect upon the accuracy of the author's judgment other than to remark that an omission of the anatomy of the organs of generation, while fitting the volume for the academy, materially impairs its usefulness to the medical man. But so far as it goes the latter will find in it a mass of information relative to the structure of animals not to be found in any other volume, and presented in a pleasing form.

H. A.

ART. XXXVII.—*Surgical Diseases of Infants and Children*. By M. P. GUERSANT, Hon. Surgeon of the Hôpital des Enfants Malades, Paris. Translated from the French by RICHARD J. DUNGLISON, M.D. 8vo. pp. 354. Philadelphia: Henry C. Lea, 1873.

THIS work is familiar to many readers of the Journal, having been published in the *Medical News and Library*, so that, as its character is pretty fully known, we shall call attention to only a few of the points which have struck us upon a perusal of it.

M. Guersant disclaims any intention of writing a comprehensive treatise upon infantile surgery, his sole object having been to embrace within the pages of his book those affections incident to childhood, which he has met with sufficiently often to have made them the subject of special study, and to pronounce opinions based upon the results of his own observation. That these opinions are worthy of careful consideration will be evident when we remember that for twenty years their author enjoyed the advantage of the practice of the Hôpital des Enfants Malades; yet, whoever disregards the great mass of the current literature upon the subject of which he treats will assuredly do as M. Guersant has done, write a book in many points behind the age in which he lives.

He advises, except in those cases of imperforate natural openings which brook no delay, to postpone operating upon children until they are at least two or three weeks old; by so doing, he thinks, more satisfactory results will be reached than where an operation is done immediately after birth. By waiting a short time an opportunity is given to vaccinate the child, and individual peculiarities may be learned, while we shall be spared the mortification of seeing the operation marred by an unexpected outbreak of inherited syphilis or an attack of variola.

The subject of fractures occupies fifteen pages, being discussed in an exceedingly general manner; indeed, we think too little space is devoted to it, while the style is vague and indefinite. For instance, separation of the coronoid process of the ulna is spoken of as if it occurred with about the same frequency as any other fracture in the neighbourhood of the elbow, whereas its existence is doubted by some, and its extreme rarity admitted by all. We ourselves think that we once saw a case, and our judgment was backed by good authority, but we have never seen a second. One case of ununited fracture is narrated, which occurred in the case of a little girl, whose age is not given, in which, after a full trial of the most highly vaunted methods to procure consolidation, amputation was resorted to at the expiration of some years. M. Guersant recommends an early application of apparatus after fracture, but he has not heard of extension by a weight in fractures of the thigh-bone. The immovable dressings, so much in vogue of late, receive no commendation, and the general line of practice is somewhat antiquated. In cases requiring amputation a primary operation is earnestly advocated.

M. Guersant has performed lithotomy one hundred times. He adopts the bi-lateral method, and advises that, when it is necessary, the wound should be plugged with agaric and a flexible catheter rather than with Dupuytren's canula. Although our author speaks with pride of the virile powers of some of his old stone cases as evidence that the spermatic ducts were not involved in his incisions, he refers to three cases in which the rectum was wounded. The exceptionally high mortality .14 is accounted for when we learn that he lost eight cases from croup. Forty cases of lithotripsy are referred to, of which four succumbed to intercurrent affections, and three died from the operation, showing what is now pretty fully established, that this proceeding has its best field among adults.

In simple hare-lip M. G. states, that we may operate in the first month, but in complicated cases, or where the bones are deficient, we are advised to delay much longer. The view taken of Littre's or Amussat's operation for imperforate anus is a discouraging one, as, in our author's opinion, the disgusting deformity which follows a successful operation is but little better than death. We are struck by the honesty with which M. Guersant tells of the mistakes he has made, mentioning a case where he excised an ovary which made its appearance in the left labium, having mistaken it for a cyst—while further on he tells us that he ligatured, with fatal result, an encephalocele which protruded through the temporo-ethmoidal suture, it having been mistaken by his colleagues and himself for an erectile tumour. We regret to find all operations upon exstrophied bladder condemned as useless, thus ignoring the labours of Mr. Wood and others. For the removal of subcutaneous tumours in general, the use of Vienna paste, or some other form of caustic, is advised, as less likely to be followed by erysipelas than when excision is resorted to.

One of the most striking peculiarities this book presents is its resemblance to a mosaic, there being no attempt to follow any method of classification. To one who has Holmes to refer to for special directions, the volume is valuable as containing the views of its distinguished author and of the French school, but it is less suitable as a *vade mecum* for students.

We always enjoy books such as this, which are given to the profession as the result of a life's labour and observation, but there is a melancholy interest attached to this volume in particular from the fact that its distinguished author is one of that army of martyrs whose lives have been sacrificed in the discharge of duty—M. Guersant having recently died of syphilitic disease, received by inoculation from a patient.

S. A.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *The Structure and Regeneration of Nerves.*—Our knowledge of the minute structure of nerves has been considerably advanced by the recent elaborate researches of RANVIER, who has shown that the description of nerves hitherto given and accepted must now be modified in many particulars. Ranvier undertook three series of investigations—the first two upon the normal histology of the nerve-tubes and their sheaths; and the third, in application of the discoveries he had already made, upon the changes which the nerves undergo after section. The results obtained will be given in the same order. The subject of Ranvier's first investigation (*Archiv. de Phys. Norm. et Path.*, March, 1872) was the structure of the nerve-tubes, nerve-fibres, or primitive nerves, as they are variously named. An ordinary medullated peripheral nerve-fibre is composed, as is well known, of a protoplasmic axis cylinder, an insulating "white substance" or medullary sheath, in which the former is imbedded, and a nucleated membrane called the sheath of Schwann, which incloses the whole, and gives the nerve the strength and resistance for which it is remarkable. We have hitherto believed that the nerve-tube is uniform in its entire length—no transverse section of it being different from another. The first important discovery made by Ranvier was that this description must be considerably modified; that a medullated nerve is not an uniform elongated structure, but that there occur upon it, at regular intervals, peculiar annular constrictions, due in part to a complete absence at these situations of the medullary sheath. This remarkable condition Ranvier was first enabled to appreciate by using some of the rarer histological reagents in preparing the specimens, such as picrocarminate of ammonia, perosmic acid, and nitrate of silver; but once the constrictions have been discovered and described, they may now be recognized without difficulty even in fresh nerves. A medullated nerve-fibre must now be described as built up of segments exactly similar in every respect, arranged end to end, and separated (or united) by annular constrictions where their extremities come into contact with each other. Each segment of the nerve is composed of the three elements just enumerated—the axis cylinder, medullary sheath, and sheath of Schwann—but here also Ranvier's description differs in some important respects from what was previously given. The Schwannian sheath of each segment is furnished with a single nucleus only, and this nucleus lies exactly in the middle—that is, at an equal distance from the two ends—of the segment, and belongs rather to a delicate layer of protoplasm lining the interior of the Schwannian sheath than to the Schwannian sheath itself. The annular constrictions which the nerve presents, or, as it may be otherwise ex-

pressed, the planes by which the segments are united end to end, present the appearance of clear, highly-refracting biconcave disks, seen in profile, and placed across the long axis of the nerve. On careful examination each disk is found to be divided into two symmetrical halves by a transverse line of extreme fineness; either half of the disk belongs to the corresponding nerve-segment, and may be traced uninterruptedly into its Schwannian sheath and the protoplasm by which the same is lined. The septa thus formed between the individual segments are so far complete that, as has been already mentioned, they entirely separate the medullary sheath of neighbouring segments from each other, and make the medullary sheath of a nerve-tube, not a continuous but a regularly interrupted covering. The axis cylinders of the segment, on the other hand, are all perfectly continuous; they pass uninterruptedly through a nearly central opening in the inter-segmental disk, and thus there is a single unbroken conducting axis of nervous matter in each tube. The length of each segment while constant in a given nerve is decidedly less in a young than in an adult animal—that is, in a growing nerve than in a fully formed one; and Ranvier makes the important observation that newly developed portions of nerves might thus be recognized in a healing wound.

The function of the annular constrictions in nerves is very evident. The fatty material of which the medullary sheath is composed is not permeable by the nutritive fluids; and it is only through these interruptions in the medullary sheath that the axis cylinder can possibly be nourished.

Ranvier next investigated the histology of the connective-tissue around the nerves (*ibid.*, July, 1872). The most interesting points which he made out related to the structure of the sheaths immediately surrounding the primary bundles of nerve-fibres. These primary sheaths are composed of concentric lamellæ of a homogeneous elastic substance, in which bundles of connective tissue are disposed, the whole forming a covering of remarkable strength for the bundle of nerves which is inclosed. This explains the great resistance to suppuration and ulceration which nerves have always been known to possess. However, there is a limit even to this resistance. If the sciatic nerve of a living rabbit is laid bare, and water allowed to fall upon it drop by drop, paralysis of the corresponding muscles will follow in fifteen to eighteen minutes; and if an examination of the nerve be made at once, a remarkable alteration will be found to have taken place upon the fibres within the sheath, for the annular constrictions have disappeared and the whole nerve is swollen, especially the axis cylinder. In forty-eight hours the fibres have completely degenerated. From this observation Ranvier draws the practical conclusion that irrigation of a wound in which nerves are exposed may not be so harmless as is generally supposed.

In his third and last research, Ranvier made a practical application of the knowledge which he had acquired to the investigation of the changes undergone by a nerve after section (*Comptes-Rendus*, December 30, 1872, No. 27). The changes upon the central and peripheral ends of the cut nerve are remarkably different. While the central extremity presents merely a granular degeneration, and its axis cylinder remains uninterrupted, the peripheral end exhibits inflammatory changes, and the functional elements suffer in a remarkable manner. The nuclei of the inter-annular segments of the surrounding protoplasm increase in size, press upon the parts within, and finally cut through the axis cylinder at the points opposite the nuclei. By careful observation Ranvier discovered that the axis cylinder is interrupted about the end of the third day after section; and it is exceedingly interesting that a complete anatomical explanation should thus be furnished of the fact observed by Longet, that the irritability of a divided nerve is lost from the third to the fourth day. The observation of Ranvier also furnishes an additional proof that the axis cylinder is the conducting element of the nerve. After the fourth day the inflammatory changes on the peripheral extremity of the divided nerve advance rapidly; the myeline of the medullary sheath is reduced to fragments, the nuclei multiply, and the vessels and fine connective tissue around the nerves participate in the change, which is the very opposite of a degenerative one, probably

on account of the absence of all nervous control from the section of the nerve on the central side.—*Med. Times and Gazette*, May 3, 1873.

2. *Experimental Researches in Cerebral Physiology and Pathology*.—Dr. DAVID FERRIER gives the following as the more important conclusions which he has arrived at from many extremely interesting and important experiments made by him on different animals in the laboratory of the West Riding Asylum, Wakefield. The details of method, experiments, and illustrations will be hereafter given in the reports of the above-mentioned institution.

1. The anterior portions of the cerebral hemisphere are the chief centres of voluntary motion and the active outward manifestation of intelligence.

2. The individual convolutions are separate and distinct centres; and in certain definite groups of convolutions (to some extent indicated by the researches of Fritsch and Hitzig), and in corresponding regions of non-convoluted brains, are localized the centres for the various movements of the eyelids, the face, the mouth, the ear, the neck, the hand, foot, and tail. Striking differences corresponding with the habits of the animal are to be found in the differentiation of the centres. Thus the centres for the tail in dogs, the paw in cats, and the lips and mouth in rabbits, are highly differentiated and pronounced.

3. The action of the hemispheres is in general crossed; but certain movements of the mouth, tongue, and neck, are bilaterally co-ordinated from each cerebral hemisphere.

4. The proximate causes of the different epilepsies are, as Dr. Hughlings Jackson supposes, "discharging lesions" of the different centres in the cerebral hemispheres. The affection may be limited artificially to one muscle or group of muscles, or may be made to involve all the muscles represented in the cerebral hemispheres, with foaming at the mouth, biting of the tongue, and loss of consciousness. When induced artificially in animals, the affection as a rule first invades the muscles most in voluntary use, in striking harmony with the clinical observations of Dr. Hughlings Jackson.

5. Chorea is of the same nature as epilepsy, dependent on momentary discharging lesions of the individual cerebral centres. In this respect, Dr. Hughlings Jackson's views are again experimentally confirmed.

6. The corpora striata have crossed action, and are centres for the muscles of the opposite side of the body. Powerful irritation of one causes rigid pleurosthotonos, the flexors predominating over the extensors.

7. The optic thalamus, fornix, hippocampus major, and the convolutions grouped around it, have no motor signification.

8. The optic lobes or corpora quadrigemina, besides being concerned with vision and the movements of the iris, are centres for the extensor muscles of the head, trunk, and legs. Irritation of these centres causes rigid opisthotonos.

9. The cerebellum is the co-ordinating centre for the muscles of the eyeball. Each separate lobule (in rabbits) is a distinct centre for special alterations of the optic axes.

10. On the integrity of these centres depends the maintenance of the equilibrium of the body.

11. Nystagmus, or oscillation of the eyeballs, is an epileptiform affection of the cerebellar oculo-motorial centres.

12. These results explain many hitherto obscure symptoms of cerebral disease, and enable us to localize with greater certainty many forms of cerebral lesion.—*Brit. Med. Journal*, April 26, 1873.

3. *Pepsin and the Digestion of Fibrin without Pepsin*.—Experiments performed in the physiological laboratory of Heidelberg by GUSTAVE WOLFFHÜGEL under Kühne's direction, have led to results essentially differing from those of von Wittich and previous experimenters. Wolffhügel finds, 1, that pepsin is not diffusible. 2. That the pyloric glands produce no pepsin. 3. That both hydrochloric and nitric acids in solution, containing 0.4 per cent., at a temperature of 60° C., are capable of dissolving boiled fibrin, though somewhat slowly, and of converting it into peptone. 4. This power of forming peptones is perceptible in both acids at a temperature of 40° C. (104° F.). Though the action of

nitric acid is decidedly slower, on this account nitric acid is to be preferred to hydrochloric in experiments on the presence and action of pepsin.—*Lancet*, May 3, 1873, from *Pflüger's Archiv*, February, 1873.

4. *Relation of the Pulse to the Condition of the Stomach.*—Important observations have recently been made by MAYER and PRIERAM on the reflex relations of the stomach to the centres of innervation for the circulation (*Centralblatt*, March 22, 1873). The previous experiments of Goltz showed, what has ever since been accepted, that irritation of the wall of the stomach reduces the frequency of the pulse. The present experimenters have determined that this slowing is accompanied by a rise in the arterial blood-pressure; and that the same result is obtained whether the irritation applied to the gastric wall is electrical or mechanical—for example, pinching the stomach with a forceps. The rise in the blood-pressure is plainly reflex, and its causation from contraction of the smaller or peripheral arteries. Similar results were obtained by inserting a bladder in the stomach and inflating it. On the other hand, the application of cold to the stomach, either by means of iced water or by ice itself, yielded no positive result, provided mechanical irritation was carefully avoided. Further experiments seemed to refer the effect on the circulation to irritation of the serous and muscular coats of the stomach, while irritation of the mucous membrane only did not evidently affect the pulse. These results may help to explain the sudden death which is frequently seen in severe injuries to the stomach. The experimenters point out that the opinion of Guy is also in agreement with the results at which they have arrived—that the frequency of the pulse falls under vegetable diet.—*Med. Times and Gaz.*, May 10, 1873.

5. *Influence of Barometric Pressure on the Phenomena of Life.*—In the course of some experiments performed for the purpose of ascertaining the effect of various atmospheric pressures on the phenomena of life, M. PAUL BERT made the extraordinary discovery that animals placed in highly compressed air died with convulsions. The same result took place in an atmosphere of pure oxygen when the compression had been carried to a much less extent, so that death was evidently due to the poisonous action of the oxygen in both cases. When sparrows are experimented on (*Comptes Rendus*, lxxvii. 443), convulsions occur when the pressure of oxygen in the receiver in which they are placed reaches $3\frac{1}{2}$ atmospheres. This pressure of oxygen can be produced by using either pure oxygen at a pressure of $3\frac{1}{2}$ or air at a pressure of 17 atmospheres. The convulsions are extremely violent and rapid when the pressure of oxygen reaches $4\frac{1}{2}$ atmospheres, corresponding to 22 atmospheres of ordinary air. They come on at the end of four or five minutes, continue for a few minutes, then cease, and again occur with more or less violence and frequency. When the pressure is high, death may occur in the first convulsion. They still continue after the bird has been removed from the receiver into the open air, and death may even occur after its removal. From experiments made on dogs, M. Bert finds that convulsions begin at a pressure of $3\frac{1}{2}$, and death occurs at a pressure of 5 atmospheres of oxygen. An examination of the blood shows that convulsions begin when the amount of oxygen in the blood, which is ordinarily only 18 to 20 per cent., rises to 28 or 30 per cent. in consequence of the pressure. Death occurs when the blood contains about 35 per cent. The quantity is not exactly the same in different animals, but it is certain that the fatal dose of oxygen in the blood is less than twice the quantity normally contained in it. There is no other poison, half the fatal dose of which may be present with impunity in the blood; and, therefore, strange as the assertion may appear, it is yet, says M. Bert, perfectly true, that oxygen is the most virulent poison known. The symptoms of poisoning, as seen in the dog, are both curious and frightful. When a dog, in which the proportion of oxygen in arterial blood has reached 32 per cent., is taken from the apparatus in which it has been subjected to the action of oxygen, it is generally in a state of tonic convulsion. The legs are stiff, the body is curved backwards and a little to one side, the eyes are prominent, the pupils dilated, and the jaws clenched. Slight relaxation soon occurs, but it is again followed by a renewed accession

of rigidity with clonic convulsions, resembling at once a convulsion from strychnia and an attack of tetanus. In the intervals relaxation is not complete, and the animal remains in a state of opisthotonos. During the convulsions respiration is suspended, but the heart continues to beat, though its pulsations are frequently extremely slow. Arterial pressure is considerably diminished. Sensibility is not destroyed, and sensory impressions seem to excite new convulsions. In cases of medium severity the convulsions, which appear at first every five or six minutes, become less frequent and then less violent; the rigidity during the intervals diminishes, and finally all symptoms disappear at the end of five, ten, or even twenty hours. In mild cases, instead of the convulsions being so violent that the animal is as rigid as a piece of wood, and may be lifted by one paw, there are unco-ordinated movements and local convulsions—symptoms, in fact, which strongly resemble those produced by carbonic acid. Sometimes the symptoms resemble those of epilepsy, and occasionally the actions of the animal seem to indicate some mental disorder.

In severe cases, when the amount of oxygen in the blood reaches 35 per cent., the rigidity is constant, with occasional clonic accessions, the teeth are ground and clenched together till they seem about to break, and death may occur after one or two convulsions within several minutes. The arterial blood then becomes black like that in asphyxia, and the heart continues to beat for several minutes after all movements of the animal have ceased. The convulsions produced by oxygen, like those of strychnia or carbolic acid, are due to its toxic action on the nerve-centres. They cease when chloroform is inhaled, and reappear when the anæsthesia passes off. When the sciatic nerve is cut, and the muscles which it supplies are thus separated from the nerve-centres, no convulsions take place in them. The convulsions continue after the animal has respired for some time in the open air, and the quantity of oxygen in the blood has fallen to the normal. It might, therefore, be imagined that some substance having a poisonous action on the nerve-centres had been formed in the blood under the influence of oxygen. This does not, however, seem to be the case, for a large quantity of blood taken from an animal in violent convulsions produced no injurious effect when injected into the veins of another animal. No alteration could be perceived in the form or size of the blood-corpuscles. The heart is the last organ which ceases to act. The motor nerves and muscles preserve their properties for the usual time after death. Animals which die during a convulsion become flaccid, and rigor mortis does not come on very quickly. Curiously enough, the temperature of the animal falls sometimes as much as 2° or 3° after the convulsions begin. It rises again at the end of some hours, if the animal is going to survive. Increased oxygenation does not then, as one would expect, cause a more rapid combustion and an elevation of temperature, but, on the contrary, seems to diminish combustion in the organism.

No explanation of these phenomena is offered by M. Bert; but the circumstance that excess of oxygen in the blood causes convulsions depending on an affection of the nerve-centres at once recalls the experiments of Kussmaul and Tenner, Rosenthal, Hermann, and Escher (*Pflüger's Archiv*, iii. 1) in which convulsions were produced by tying the bloodvessels passing to or from the brain. The blood thus caused to stagnate in the bloodvessels of the brain became deprived of oxygen and loaded with carbonic acid, and thus a local asphyxia of the brain, if it may be so termed, was produced, although the rest of the body was amply supplied with arterial blood. The same result would be produced, if spasm of the vessels should occur and arrest the circulation through them. The experiments made by Sadler on artificial circulation through the vessels of an excised muscle (*Ludwig's Arbeiten*, 1869, p. 212), as well as some unpublished ones made by the reporter on artificial circulation through those of the rabbit's ear, in Professor Ludwig's laboratory, and under his direction, show that when the circulation is arrested in an artery for some time, and thus local asphyxia of it is produced, it becomes dilated and allows blood to flow rapidly through it. After richly oxygenated blood has streamed through it for a very short time, however, the flow becomes very languid and soon ceases almost entirely, apparently from spasmodic contraction of the vessel. It seems

not improbable that the vessels supplying the nerve-centres may contract in the living animal under the influence of an extreme amount of oxygen in the blood, just as those of excised parts do under the stimulus of a moderate amount. Circulation being thus arrested, convulsions would occur just as if the vessels had been tied. Contraction of the vessels in other parts of the body also would retard the flow of blood through them; and the slowness of circulation thus induced would afford a ready explanation of the diminished oxidation and lowered temperature observed by M. Bert.—*Lond. Med. Record*, April 2, 1873, from *Comptes Rendus*, vols. lxxiv. and lxxv.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Mode of Action of Purgatives on the Intestines*.—Different hypotheses have been proposed to explain the manner of action of purgatives. About thirty years ago M. Poisseuille asserted that the action of saline purgatives was a purely physical one, and that the catharsis they produced was an endosmose of the serum of the blood through the coats of the vessels to the saline solution within the intestinal tube. M. Moreau confirmed this assertion by experiment. He drew out a knuckle of intestine of an animal, injected into it, after applying a ligature to the two ends, a solution of 4 grammes of sulphate of magnesia in 20 grammes of water. He then returned the intestine into the abdomen and after 24 hours he found a collection of liquid amounting to from 200 to 300 grammes, showing a considerable exosmose had occurred.

M. VULPIAN, it is stated (*Gazette Hebdom. de Méd. et de Chirurg.*, May 23d, 1873), has improved on M. Moreau's method of experimenting, so as to show the progress of the phenomena, and has communicated the results to the Biological Society of Paris, at their meeting on the 17th of May. Without entering into a detail of his experiments, we may state they prove that sulphate of magnesia produces an intense intestinal catarrh, without increasing the peristaltic movements; the phenomena of exosmosis are greatly modified; the fluids flow towards the mucous membrane and pass through it. At the same time, a certain portion of the sulphate of magnesia is absorbed, for an unusual amount of the salts of magnesia are found in the urine. The same phenomenon is observed in man. The day after a purgation with sulphate of magnesia an unusual amount of the salts of magnesia is found in the urine.

Resinous purgatives act in an analogous manner, but much more energetically, in some cases causing large ecchymoses and even true hemorrhages from rupture of the capillaries, and large bloody stools without increasing the peristaltic action.

7. *Pathogenic Influence on the Skin of Bromide of Potassium given Internally*.—Dr. J. NEUMANN has investigated this subject. He refers to the observations of Voisin, of Paris, and Mitchell, of Philadelphia, according to whom the employment of bromide of potassium in weak doses brings on eruptions similar to acne, with itching and the consecutive formation of indurated tubercles; whilst the prolonged use of the substance gives rise to the production of red tumours, which often become sore, of carbuncles, anthrax, eczema, and nettle-rash. Dr. Neumann states that, for his own part, he has observed eruptions very much like molluscoid acne coming on in successive outbreaks, and, in another case, a carbuncular eruption consisting of infiltrated tumours, with considerable loss of substance in the centre. The author inclines to think that the bromine passes into the blood, and thence into the various glands of the skin, and he accounts thus for the production of the eruption. It is known that the presence of bromide of potassium has been observed in the urine, saliva, and the secretions of the skin.—*Lancet*, May 10, 1873, from *Wiener Med. Wochenschrift*, No. 6, 1873.

8. *Physiological Effects and Clinical Application of Digitalis*.—According to ACKERMANN, when digitalis is administered to a healthy animal, it acts, in the first place, upon the heart. This effect of the drug is manifested by alterations in the frequency and character of the pulse—the frequency first diminishes, and then, after a time, suddenly and decidedly increases; this is succeeded in turn by a second slowing with great irregularity; and finally the cardiac contractions are completely arrested. The first of these effects of digitalis upon the heart is very familiar to those who administer it medicinally; but there are two points in regard to the slowing of the pulse that deserve greater attention than they receive. First, it is important to notice that the reduction of the frequency is entirely due to a lengthening of the cardiac diastole, the perceptible pulse being not more prolonged than before; and, secondly, with regard to the physiological explanation of this effect of digitalis upon the heart, we must now grant (according to Ackermann) that Traube is right in referring it to irritation of the peripheral branches of the vagus in the heart (inhibitory). The second effect of digitalis on heart is less familiar—the sudden and well-declared acceleration. This is to be referred, as Traube has again shown, to a paralysis of the nerve-fibres, previously irritated by the smaller dose, for the strongest induced current will not diminish the frequency. There is, however, in all probability an element of sympathetic (acceleratory) irritation in it as well. The acceleration may be followed by an immediate, sudden, and permanent arrest of the heart—that is, by death; more commonly, however, there is great irregularity of rhythm, with marked slowing of the stroke. This phenomenon, as it occurs with complete extinction of vagus-irritability, is a most alarming one, and is followed by an equally complete destruction of the irritability of the cardiac muscles—*i.e.*, death by paralysis of the heart.

Digitalis acts, in the second place, upon the circulation apart from the heart—an effect of the drug which, although much less generally known, because much more difficult to appreciate and measure, is yet of very great importance. This is the alteration in the arterial blood-pressure, which follows quite as speedily as the alteration in the frequency of the pulse, and is observed first as a rise, thereafter as a gradual decline to a point below the normal, and finally as a fall almost to zero. It is especially remarkable that these pressure-changes occur with the most various degrees of frequency of the pulse, so that the most different heights of pressure may be combined either with a frequent or with an infrequent pulse. This proves that digitalis must act upon some part of the circulation beyond the heart; and from the fact that the smaller arteries may be seen to contract in rabbits under the influence of digitalis, it may be considered as proved that the one important factor in the production of the elevation of arterial pressure is the contraction of the small bloodvessels of the body.

Perhaps the most interesting point in regard to the increased arterial pressure induced by digitalis is, that it is accompanied by a fall in the bodily temperature. Whether he is correct or not, Ackermann does not hesitate to follow Heidenhain, and to consider this diminution of the bodily temperature as a result of the increase of the arterial pressure, from the extra amount of blood carried through the cold surface of the body in a unit of time.

Bearing in mind these three well-ascertained points in the physiological action of digitalis—on the heart, on the blood-pressure, and on the bodily temperature—we turn now, with Ackermann, to review the therapeutical action of the drug in disease. When digitalis was still administered, not only empirically, but even haphazard, Traube referred its beneficial effect in certain diseases of the heart simply to its mechanical action upon the circulation. To begin with, there are always to be observed in such cases, after its administration, increased energy and regularity of the cardiac contractions corresponding with the diminished frequency in physiological experiments. There is, at the same time, or very soon after, in these cardiac cases, a remarkable reduction of the general venous congestion of the system, and of the œdemas, effusions, and catarrhs which it has induced. The wonderful effect of a few doses of digitalis in such a condition of system is not to be attributed solely to its direct cardiac action, but partly to its influence on the small vessels, which by their contraction in-

duce aortic hyperæmia, comparative venous anæmia, the return of exudations into the vessels, a watery condition of blood, and a corresponding diuresis. Now, it is plain that this result of the administration of digitalis in heart disease is exactly the same as the result of compensatory hypertrophy of the organ, when it occurs; and, accordingly, as long as the circulatory disturbances are compensated by hypertrophy in cardiac diseases, digitalis is not indicated—and not only not indicated, but contraindicated; for instances have occurred in which such uncalled-for administration of the drug has caused serious and even fatal hemorrhage from the over-filled vessels. The cardiac affections demanding digitalis are by far most commonly mitral insufficiency and obstruction. According to Corrigan, digitalis is contraindicated in aortic insufficiency, as the prolongation of the diastole allows increased regurgitation. Dr. B. W. Foster, however, and Traube, insist upon the value of the drug in aortic disease, saying that clinical experience bears them out. The “weak heart” of Stokes, referred by the Germans to granular and fatty degeneration of the cardiac muscles, induces similar compensatory disturbances, and offers a capital object for digitalis; but although a few doses of the drug relieve the circulation, diminish the cyanosis and dropsy, and increase the amount of urine, yet, according to Traube, this condition of the heart, depending as it does on paralysis of the vagus, impaired cardiac nutrition, and consequent fatty degeneration of its fibres, will advance in course of time to such a degree that digitalis will be unable to stimulate the insensible cardiac nerves. But even in this hopeless condition of the heart, while the frequency of the pulse does not fall with digitalis, the patient feels himself lightened by the drug, from its influence on the peripheral arteries.

Another well-known clinical effect of digitalis is that it increases the amount of urine passed. On this account it has been called a diuretic, but Ackermann believes that it is so indirectly only, through its influence on the heart, and perhaps by increasing the arterial pressure. One more result of the action of digitalis on the heart, and of the prolongation of the diastole, is that the cardiac muscle, which receives its nourishment principally in the state of relaxation, is placed under more favourable conditions of blood-supply.

The third physiological effect of digitalis is seen in its administration in febrile conditions, where it reduces the temperature of the body. This reduction of temperature is accompanied by the usual reduction of frequency of the pulse; but the two effects bear no constant relation to each other. The use of digitalis as an anti-pyretic is, moreover, to be seriously considered, as it frequently induces cardiac irregularity, which may end at any moment, as we said, in cardiac suspension. The whole question of digitalis in fever is obscure and unsettled.

The effects of digitalis on the stomach, bowels, etc., are usually so slight in chronic cardiac cases as to be neglected; but they may be of serious import in fevers—appearing as sickness, anorexia, etc. In very large doses the drug has been said to cause alarming nervous symptoms and an exanthematous disease of the skin; but these are doubtful.—*Med. Times and Gazette*, Feb. 8, 1873, from Volkmann's *Klinische Vorträge*, No. 48, Dec. 19, 1872.

9. *Infusion of the Leaves of the Solanum Lycopersicon as a Diuretic.*—M. STANISLAS MARTIN extols (*Connaiss. Médic.*) an infusion of the leaves of the *Solanum Lycopersicon* (tomato), as a diuretic.—*Revue de Thérap. Méd. Chirurg.*, 15 May, 1873.

10. *Nitrate of Potash and Quinia as Febrifuges.*—Dr. H. MACNAUGHTEN JONES states that for some years past he has frequently employed nitrate of potash and quinia in large doses in diseases where the temperature maintained a high range, and almost universally with success. He records several cases of simple pneumonia, of pneumonia complicated by typhoid symptoms, and of intermittent fever, where this plan was pursued with good results. The nitrate was given in doses of fifteen grains every six, or even three hours, whilst the quinia was ordered in ten-grain doses at corresponding intervals; sometimes a little ipecacuanha was added.—*Brit. Med. Journal*, March 1, 1873.

11. *Therapeutical Effects of Aconite and Crystallizable Aconitia.*—M. G. SÉE, of Paris, ranks aconite among the agents which paralyze the nervous system. The active principle has been lately isolated in France in a crystalline form, the aconitia previously obtained in Germany and England being the amorphous alkaloid. The crystallizable aconitia is sparingly soluble in water, but soluble in alcohol and ether, and especially in chloroform it acts on the motor system in the dose of $\frac{1}{10}$ of a milligramme (the $\frac{1}{1000}$ of 15 grains), for, when injected under the skin of a rabbit in this very small dose, it produces paralysis in a very short time. Dr. Sée considers that the physiological operation of aconitia resembles that of the woorara poison, for it acts on the peripheral extremities of the motor nerves at their terminations in the muscles. Aconitia administered in therapeutical doses by the mouth causes, after preliminary tingling of the tongue, a sensation of stiffness in the chest, followed by dyspnoea, and afterwards anæsthesia, which is the commencement of asphyxia. It is a medicine which should be given with great caution in consequence of its dangerous effects on the respiration. It has been principally employed in neuralgia, especially of the fifth pair of nerves, and of the sciatic and intercostal nerves. It has also been recommended in gout, acute rheumatism, septicæmia, and erysipelas, but although it has been extolled by some distinguished French practitioners, Dr. Sée does not admit its utility. It has been supposed to exert a beneficial effect in catarrh and bronchitis, and the result seems to be due to its property of diminishing the mucous secretions. It appears to be useful to singers, who often suffer from painful contraction of the larynx, which is cured by aconite. On the whole, Dr. Sée, who writes from the results of experience in a large hospital, does not seem to be much impressed with the therapeutical virtues of aconite or aconitia.—*British and Foreign Med. Chir. Rev.*, April, 1873, from *L'Union Médicale*, May, 1872.

12. *On the Oleate of Mercury.*—MR. BERKELEY HILL states (*Practitioner*, April, 1873), that since this preparation was introduced to the notice of the profession by Mr. Marshall, about a year ago, I have employed it in a large number of cases in hospital and private practice, with the following results. In the first place, if continuously applied, it quickly produces the usual effects of mercury on the system, and if used in sufficient quantity causes salivation. Secondly, it is apt, in delicate fair-skinned persons, to excite violent smarting pain, which, though rarely lasting more than half an hour, if so much, is enough to disgust them with the remedy. The irritation may even cause erythema and slight vesication, though I have never seen any more serious local effect than this. To avoid these undesirable occurrences, Mr. Marshall has devised three preparations of different strengths, containing 20, 10, and 5 per cent. of peroxide of mercury respectively: to the weakest dilution, 10 per cent. of morphia as oleate of that base is added, to allay the irritation from the mercury, and assuage the local pain of inflammation, when used for affections of that kind.

The preparations are best made according to a formula prescribed by Mr. Martindale, the dispenser to University College Hospital: For the 20 per cent. solution, stir 10 drachms of oleic acid in a mortar, while 2 drachms of precipitated peroxide of mercury are gradually sprinkled into it, and triturate frequently during twenty-four hours, until the peroxide is dissolved and a gelatinous solution is formed. The 10 per cent. solution is made in exactly the same way, but the smaller quantity of oxide renders the compound more fluid. The morphia and mercury oleate is made by dissolving 1 drachm of pure alkaloid of morphia in 5 drachms of oleic acid and mixing the solution with 5 drachms of 10 per cent. oleate of mercury. It is necessary to use the oxide freshly precipitated from an aqueous solution, not one produced by dry heat; and heat should not be employed to dissolve the mercury in the acid, as even very moderate elevation of temperature causes some decomposition of the oxide to take place.

With one or other of these preparations the application of this form of mercury can be continued on even very sensitive skins. When used for inunction, instead of the grey ointment, about a scruple or half a drachm of the 20 per cent. jelly should be rubbed gently into the flank till it is absorbed by the

skin, which occurs in about eight or ten minutes, leaving the skin almost dry and not greasy. This may be repeated once or twice in twenty-four hours, of course changing the site of the inunction each time. The anointed part may be washed next day without fear. This quantity usually causes swelling and slight soreness of the gums in a week, if anointed once a day, and in four days if applied twice daily. Before using the stronger solution it is well to test the skin with the weaker form, lest too energetic application of the oleate should cause painful irritation and trouble. But I have found the 10 per cent. solution most useful as an adjuvant to the ordinary treatment by iodide of potash internally, or for persons whose stomachs do not bear mercury well. For example, in cases of leproid, or tubercular eruptions, relapsing after disappearing more than once, this form of mixed treatment is usually very successful.

The great advantage of the oleate over any other form of mercury, when externally applied, lies in the rapidity of its absorption, which makes it very serviceable as a kind of cosmetic; that is, to paint over syphilitic papules or stains in the face or other exposed parts. For this purpose I direct the patient to rub into the spots themselves, night and morning, a little of the 20 per cent. solution with the tip of the finger—the usual treatment being continued at the same time. It is remarkable to observe how rapidly the papules sink down and grow pale when the oleate is directly applied to them. If the 20 per cent. is too stimulating, the weaker ones may be employed, though their effect is less satisfactory.

Again, the oleates are very useful in fissures of the fingers about the nails or in the palms. Rubbing the 10 per cent., or, if there is much soreness, the 5 per cent. solution with morphia, into the fingers, at night, and sleeping in wash-leather gloves, is a very effectual way of healing these troublesome affections. By day the cracks should be well closed by court-plaster and plastic collodion, and gloves worn out of doors.

I have not had much success with the oleate in non-syphilitic affections, but I have not tried it extensively. It has proved a very effective parasiticide for pediculi, as its penetrating power enables it to diffuse itself thoroughly over the scalp and pubis. I have also used it to inflamed joints, as a controllant of inflammatory action, but I have not perceived any clear benefit to be derived from its use in such cases. In syphilitic affections the oleate is most serviceable, being a certain and less disagreeable cutaneous application than ointments, and really hastening the subsidence of papules and other disfigurements of exposed parts of the skin.

13. *Employment of Chromic Acid as a Caustic in Affections of the Throat and Larynx.*—Dr. ISAMBERT, of Paris, having found the application of chromic acid beneficial in various affections of the gums, mouth, palate, and pharynx, has applied the same remedy to the larynx itself, by means of the laryngoscopic sponges. His first object in this application was to destroy some epithelial vegetations and small warts, which are often observed at the inter-arytænoïd commissure and in the neighbourhood of the vocal cords. The solutions he used were at first rather weak, but he was able to use stronger ones rather frequently, in the dose of 1 gramme (about 15 grains) to 8 grammes of water, and sometimes he used them even stronger. Dr. Isambert found that the patients bore the application very well, although at first it caused a little local irritation. He considers that one of the most valuable results obtained by this treatment is the rapid repression of œdematous conditions of the glottis, so as to render it unnecessary in some cases to perform the operation of tracheotomy, where this measure seems to be urgent. The chromic acid applied directly to the œdematous parts of the larynx reduces the volume of the swollen tissues, relieves the feeling of suffocation, and postpones, even if it does not supersede, the necessity for tracheotomy. In other cases, such as syphilitic contractions of the larynx, the specific nature of which might not have been evident at first sight, Dr. Isambert has been able to avoid tracheotomy, to gain the time necessary for recognizing the specific nature of the disease, and to cure the patient by the use of internal remedies, aided by mercurial inunctions to the surface of the body. In polypous diseases of the larynx, and epithelioma and cancer, the

chromic acid treatment is useless or injurious.—*British and Foreign Med. Chir. Rev.*, April, 1872, from *Bull. Gén. de Thérap.*, July, 1872.

14. *Artificial Fibrin as a Dietetic Substance*.—Dr. JOHN GOODMAN calls attention (*Brit. Med. Journal*, May 17, 1873) to his discovery of this new dietetic substance. So far as he has employed it, he says, "it promises fair to be invaluable in medical practice, especially in cases of feeble alimentation and deficient nutrition, and second to none in those cases where rejection of food forms a prominent feature, or where the appetite and digestive powers are reduced to a minimum. As fibrinous material, it is of course highly nutritious, and eminently adapted to all cases where there is a deficiency of fibrin in the blood. It is, perhaps, unparalleled in its qualities of lightness and digestibility, and is moreover a great delicacy. In many urgent cases of rejection of food, etc., it not only remains where an egg otherwise cooked would not be tolerated, but its presence in the stomach has been found to create a feeling of want rather than of superfluity, and to promote rather than decrease the appetite for food.

"The production of this substance is within the reach of every sick room, and is effected with great facility. It is formed by exposing albuminous material to the operation or influence of cold water, for a given period; and on account of its great plenteousness we employ the ordinary hen's egg for its production. When the shell is broken and removed, and its contents are immersed in cold water for twelve hours or so, they are found to undergo a chemico-molecular change, and to become solid and insoluble. This change is indicated by the assumption by the transparent white of the egg of an opaque and snowy white appearance, which far surpasses that of an ordinary boiled egg. The product, and the fluid in which it is immersed, must now be submitted to the action of heat to the boiling point, when the fibrin will be ready for use."

15. *Solvent Power of Glycerine*.—MÉHU has confirmed the observations of Kleber, and gives the following table as one of sufficient authority to be consulted by physicians and pharmacists at all times.

One thousand parts of glycerine dissolve of—

Arsenious acid	20.00	Tartrate of potassa and	
Arsenic "	20.00	of iron	8.00
Benzoic "	10.00	Cyanide of potassium	32.00
Boric "	10.00	Tartarized antimony	5.50
Oxalic "	15.00	Bromide of potassium	25.00
Tannic "	50.00	Iodide of potassium	40.00
Alum	40.00	Morphia	0.45
Carbonate of ammonia	20.00	Acetate of morphia	20.00
Chloride of ammonium	20.00	Hydrochlorate of morphia	20.00
Atropia	3.00	Arsenate of soda	50.00
Sulphate of atropia	33.00	Bicarbonate of soda	3.00
Chloride of barium	10.00	Neutral carbonate of soda	98.00
Brucine	2.25	Phosphorus	0.20
Quinia (pure)	0.50	Acetate of lead	20.00
Tannate of quinia	0.50	Sulphur	0.10
Cinchonia	0.50	Strychnia	0.25
Sulphate of cinchonia	6.70	Nitrate of strychnia	4.00
Acetate of copper	10.00	Sulphate of strychnia	22.50
Sulphate of copper	30.00	Veratria	1.00
Lactate of iron	16.00	Chloride of zinc	50.00
Sulphate of iron	25.00	Iodide of zinc	40.00
Bichloride of mercury	7.50	Sulphate of zinc	35.00
Iodine	1.90		
Chlorate of potassa	3.50		

—*Lond. Med. Record*, April 2, 1873, from *Annuaire de Pharmacie*, 1872.

16. *Clinical Means of Recognizing Mercury in the Excretions.*—M. MAYENCON and Dr. BERGERET, in an interesting paper on this subject in Robin's *Journal d'Anatomie*, No. 1, 1873, give the following as the conclusions at which they have arrived: 1. That mercury and its salts are absorbed by the skin as well as by the stomach. 2. That of the mercury absorbed a part, and that the major part, is immediately eliminated, whilst the smaller part impregnated the tissues, from which it is only insensibly eliminated. Even this part, however, is rather quickly eliminated if the use of the medicine has not extended over any great length of time. 3. Elimination seems to be effected by all the excrementitious fluids, but chiefly by the urine and the intestinal juices. 4. Iodine has a marked effect in clearing away mercury from the tissues. 5. Mercury and mercurial preparations discharged by the humours, and especially by the urine, are readily discoverable by the action of a voltaic element—iron and platinum. The mercury forms a metallic coating on the platinum, and should then be converted into the bichloride, and finally into red biniodide with a solution of iodide of potassium.—*Lancet*, April 5, 1873.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

17. *Infantile Enteralgia.*—Dr. JOHN BOYD, in an interesting paper (*Edin. Med. Journal*, Feb. 1873) on an affection which he terms "infantile enteralgia," remarks: "In male children especially, from two weeks to four or six months, of a lively mobile temperament, we very frequently observe them subject to attacks of abdominal pain, which come on suddenly, generally at night, commencing at a little after twelve, and continuing with slight intermissions to four or five in the morning. The little sufferer draws up its knees and tosses about in the nurse's arms; the cry varying from an agonized scream to a plaintive wail, with intervals of sobs and long-drawn breaths; but neither the pulse nor the respiration is accelerated, nor is there usually any abnormal elevation of temperature. The natural language of the malady denotes unmistakably that the bowels are the seat of the pain, though the tenderness on pressure does not seem excessive. After a time the local uneasiness appears to have produced a quasi-hysterical action on the nervous system. If the infant be old enough to be attracted by any glittering object, or a series of moderately loud noises, he may forget his woes for a time, and all at once recollect them and resume his ululations as vehemently as before; bearing on his countenance that expression of conscious ill-usage which is so generally seen in those afflicted beings of maturer age and opposite sex, of whom it has been quaintly remarked that they are so very ill because there is so very little really the matter with them. After disturbing the whole household for the best part of the night and exhausting all the curative efforts of the establishment, the young gentleman falls quietly asleep, and seems so well and fresh next day that the history of the direful nocturnal events sounds like a baseless romance when related even to sympathetic auditors. Yet such experiences constitute one of the most painful trials which the youthful primipara is called upon to undergo, although Mater-familias of fifteen or twenty years' standing sustains them in general with philosophic equanimity.

"The enteralgia referred to does not commonly depend on mere fecal accumulation. In thriving children who are not as yet subjected to the pangs of teething, the alvine evacuations are comparatively scanty so long as the maternal lacteal secretion is the sole or preponderating source of nutrition. In such cases I have invariably noticed, that so long as the abdominal suffering lasts, the urination is suspended, that a true ischuria renalis exists for the time being; and that whenever micturition occurs the crying and distress cease, presenting exactly the same termination as that of the *passio hysterica*—the copious flow of a large quantity of clear limpid fluid. Acting on this indication, I have for

many years past been in the habit, whenever such attacks were brought under my care, of prescribing from eight to ten minims of spiritus etheris nitrosi in a drachm of water, to children of the age above mentioned. Generally after the administration of this draught there occurs a discharge of flatus from the superior or inferior orifice of the alimentary canal—the ether acting as a diffusible stimulant and carminative; but without exception the passage of urine in large quantity takes place within a few minutes after its imbibition, the cries cease, and the small patient sinks into a refreshing slumber. Whatever view may be taken as to the causation of the malady in question—whether it may depend on a non-secretion depending on a temporary congestion of the glomeruli of the kidney or a partial paralysis of the more elaborated and complex urinary passages of the male, or merely from the presence of flatus in the colon mechanically suspending the renal function,—the fact is well ascertained that the phenomena above depicted are extremely frequent in male infants of all classes, and every variety of social and hygienic surroundings; also, that in some instances very serious mischiefs have been the consequence of such nocturnal pervagitus.”

18. *Hemorrhage of the Pons Varolii with Saccharine Urine.*—M. LIONVILLE relates (*Gaz. des Hôpitaux*, Feb. 8) a case of complete paralysis, with only slight modification of sensation. The patient was picked up in the street insensible. The objective symptoms were those of hemorrhage in the pons Varolii. The urine was drawn off, and found full of albumen and sugar. There was no indication of Bright's disease. The presumption was, in accordance with Bernard's celebrated experiment, that the posterior wall of the fourth ventricle was compressed. Speedy death occurred. The necropsy showed that the hemorrhage had invaded a large part of the pons, and affected the upper part (that above the auditory nerves) of the wall of the fourth ventricle.—*London Med. Record*, April 2, 1873.

19. *Disseminated Suppuration of the Kidney secondary to certain conditions of Urinary Disturbance.*—Dr. W. H. DICKINSON, in a paper which he recently read before the Royal Medical and Chirurgical Society of London (*Lancet*, March 8, 1873), described the peculiar suppurative condition which is sometimes spoken of as the “surgical kidney,” and is produced, as he shows, by the contact of unhealthy urine. Of all renal disorders, next to those described by Bright, it is the most destructive to life. It may almost be said to form the natural termination of stricture of the urethra, and is the especial danger which attends the use of the catheter and lithotrite.

The renal change which is always associated with signs of pelvic and vesical inflammation, and often with alterations of the gland dependent on wasting pressure and chronic vascular disturbance, essentially consists of a peculiar turgidity and friability of the renal structure, with the formation of small scattered abscesses, or soft yellow deposits antecedent to abscesses, throughout its structure. With these are usually seen conspicuous white lines in the cones, which are morbidly occupied straight tubes.

With this condition the microscope shows more or less dilatation of the straight tubes, distension of, or coagulation within, the bloodvessels associated with them, and disseminated intertubular suppuration, the distribution of which is regulated by the course of the veins. (The microscopic appearances were illustrated by drawings which show the dilatation of the straight tubes; the irregular repletion of, or coagulation within, the vessels of the cones and the larger veins of the cortex; and the origination of abscesses around the affected vessels and throughout limited tracts of the intertubular tissues. The swelling of the intertubular tissue where thus infiltrated by the new cellular formation was strikingly depicted in contrast with the slender network presented by the same structure in a part of the gland exempt from the change.)

Taking the structural changes in their mutual relation, the usual dilatation of the tubular exits, the morbid occupation of the veins, and the general absence of tubal inflammation, the nature of the process is clear. The disorder has its origin in the regurgitation of urine charged with morbid products.

This occupies and generally distends the straight ducts, and thence enters the neighbouring bloodvessels, and charges them with an infection resembling in its results that of pyæmia. This is distributed by the veins to the rest of the gland, sowing abscesses in their course, and ultimately causing constitutional symptoms analogous to those of pyæmia when otherwise derived.

The urine being obviously either the source or the vehicle of the morbid matter, it remains to inquire whence and in what circumstances it becomes thus contaminated. To help in answering these questions the author has collected the particulars of 69 cases from the post-mortem books of St. George's Hospital. The disorder was traced to mechanical obstacles to the escape of urine (stricture or enlarged prostate) in 31 cases; to paralysis of the bladder in 17; to stone in the bladder or operation for its removal in 15; to cystitis from other causes in 5; and in 1 to a renal calculus complicated with enlargement of the prostate. Looking at the urine as directly connected with the origin of the disease, it appears that three conditions usually concur—retention, ammoniacal decomposition, and admixture with the products of mucous inflammation. Of these, ammoniacal decomposition appears to be essential, or at least to be constantly present. The urine is also generally fetid, and more or less mixed with vesical products, pus, mucus, and blood. The ammoniacal change, although possibly arising independently of mucous inflammation, produces it so constantly that the origin of the disease is always thus complicated. The clinical antecedents to this condition are fundamentally of two kinds—those which begin with retention, and those which begin with cystitis: both in the end producing an ammoniacal and putrescent state of urine. Mechanical obstacles and loss of expulsive power, belonging to the first and larger class, occasion the retention and subsequent decomposition of urine, and its consequent admixture with the products of mucous inflammation. Stone and other vesical irritants, belonging to the second class, begin by causing morbid vesical discharges, which render the urine prone to decomposition, and ultimately induce in it a putrescent condition, not altogether dissimilar to that which springs from retention. The rarity of the renal disease as a consequence of stone in the kidneys is probably to be explained by the less putrefactive tendency of the discharges from the pelvic membrane, or of the urine in that cavity.

In cases otherwise so tending, catheterization, lithotrity, or some such instrumental proceeding, seems sometimes to act as the immediate instigator of the morbid process, as is witnessed by the common phrase which stigmatizes the disease as the "surgical kidney." The disorder, however, may arise independently of any surgical intervention, and would perhaps be better distinguished by the term *uriseptic*, which would declare its general clinical relations more comprehensively.

Having regard to recent researches which have associated the lower kinds of organic life with pyæmia, it is worth noting that the condition of urine which causes the disease now in question is one in which vibriones and bacteria abound. From this, however, no inference as to the nature of the virus can be safely drawn, except that it is associated with decomposition.

Passing to the symptoms of the disease, they have a general resemblance to those of pyæmia, being those of blood-poisoning rather than of renal inflammation. Unlike what happens with pyæmia, organs other than the kidney appear seldom to share in the suppurative process. The complaint usually ends fatally within three weeks of the first symptom, though there is evidence that recovery sometimes occurs. Perirenal suppuration is an occasional result.

In treatment our efforts must be directed chiefly to prevention, to which end, beyond cautious surgery, measures of two kinds suggest themselves. First, the preservation or restoration of the natural acidity of the urine, a matter of most difficulty where it is most needed; secondly, as a suggestion as yet unwarranted by experience, the introduction of antiseptics by injection into the bladder.

To sum up: the form of renal suppuration which may be termed *uriseptic* has its origin in ammoniacal and putrid urine, poison from which is conveyed by the veins into the substance of the kidney, and thence infects the system, causing symptoms in some respects resembling those of pyæmia. As this form

of disease is little obedient to curative medicine, though not necessarily fatal, our efforts must be directed towards the correction of the state of urine from which it springs.

20. *The Nature and Treatment of the Constitutional Forms of Eczema.*—Dr. E. D. MAPOTHER, in a paper read before the Surgical Society of Ireland, observed that if the interest attaching to a disease be proportional to its frequency, eczema is most worthy of attention, for one-third of skin diseases are forms of this malady.

The causes and treatment of those forms due to sources of local irritation are thoroughly understood; for example, those due to the action of alkalis in washerwomen, sugar mites in grocers, the flow of tears from strumous eyes, the gravitation of the blood in varicose veins, are cured by the removal of the exciting cause and some emollient application, of which bran stupes and bran poultices are the best.

When eczema, on the contrary, affects large surfaces of the body without any local irritation, is symmetrical, apt to relapse, and (as is frequently the case) traceable in several members of the same family, some constitutional cause evidently exists, and should be sought for if we wish to treat the disease scientifically. The French call this cause "the dartrous diathesis," *dartre* being a popular term synonymous with "heat in the blood" in our vernacular; they confess ignorance of its nature, and only recognize it by aptness for relapse in eczema and lichen, and psoriasis as well. Dr. Mapother has long been inclined to hold with Golding Bird that excess of uric acid in the blood is this constitutional cause. Dr. Bird says: "I have been two or three times consulted in the cases of patients lying bed-ridden from rheumatic gout, in whom one or both legs were covered with an eczematous eruption, and the parts on which the exudation from the surface had dried had been actually frosted with microscopic crystals of urate of soda."

The following facts seem to him to prove that the gout poison is the cause of eczema:—

1. Many reliable observers have obtained uric acid and urates from the exudation of eczema, and their increase in the urine in the chronic stage of each disease is undoubted.

2. There is a great increase of fibrin in the blood, and it exudes and spontaneously coagulates on the raw surface.

3. Both diseases are characterized by great tendency to œdema and desquamation, which latter, of course, is universal in eczema, and occurs in three-fourths of the cases of gout when localized.

4. Gout can be shown to be hereditary in about three-fifths of the cases, and such predisposition can be shown in about an equal proportion of cases of general eczema. The greater proneness of the male sex is observable in both diseases.

5. Every one must have remarked the frequent consequence of symptoms of gout or of rheumatic gout and eczema. The Chelsea pensioners and the poorer agricultural people of this country exhibit this concurrence on the largest scale. I have seen very few cases of general eczema which had not been preceded or accompanied by what is so well known as acid or gouty dyspepsia.

6. It is an aphorism of Hippocrates that gouty attacks are most frequent in spring and autumn, and the same may be undoubtedly said of eczema.

7. The parts most distant from the circulatory force of the heart and least vascular—for example, the extremities and ears—are the most frequent seats of each disease, as the urates are most easily deposited.

8. And lastly, the treatment proven to be useful in gout is usually successful in eczema.

Lithia, Dr. Mapother has found of the greatest use, as would be anticipated from its extraordinary powers of combining and dissolving with urate of soda and uric acid. It never fails to act as a diuretic, and the derivative influence from the skin to the more extensive surface of the kidney can be easily understood.

Dr. Mapother usually combines colchicum with lithia.

It would appear that colchicum has no power of increasing the excretion of the solids of urine, but it is now generally believed to check the formation of urea and uric acid, a fact anticipated by the sagacity of Dr. Graves, whose physiological deductions were so remarkable.

In inveterate cases of eczema arsenic may be necessary, and that metalloid is of great repute in chronic gouty and rheumatic affections.

Lastly, sulphur internally and externally, especially when used in the waters of Harrogate, Leuk in Switzerland, and Lisdunvarna, nearer home, is of equal efficacy in gouty and eczematous affections.

A few words about external treatment. Carbolic acid diluted with seven parts of lard keeps the skin pliable, prevents suppuration and fetor, and has probably some astringent power. In cases of universal eczema, which are rare, starch baths, or, still better, bran baths, are called for, to check the excessive cutaneous transpiration.

Dr. Mapother strives to show that constitutional eczema depends on the gouty diathesis, and should be treated according to the well-known therapeutic indications observed in that condition.—*The Practitioner*, May, 1873, from *Medical Press and Circular*, Feb. 19, 1873.

21. *Alterations of the Nervous System of the Great Sympathetic in Cases of Constitutional Syphilis*.—Dr. PETROW on examining portions of the plexus of the great sympathetic which he had taken (ten to twenty-four hours after death) from the bodies of individuals affected with acquired constitutional syphilis, has stated two sorts of pathological changes: 1. Modifications of the protoplasma of nervous cells which become loaded with brilliant pigmentary corpuscles, increasing with the age of the disease, and often accompanied by colloid transformation of the cells; the cells of the endothelium surrounding the nervous cells frequently undergo the same gelatiniform transformation, and cannot then be distinguished from the nervous cells. These changes can exist without the interstitial connective tissue being impaired. 2. Modifications of the interstitial connective tissue with hyperplasia of the fibres, constituting large irregular fasciculi, which push aside and compress the nervous cells and fibres. The cells are then atrophied, irregular, and dotted with pigment, whilst the fibres are flattened, and their myelin shows slight granulations.—*Lancet*, May 10, from *Virchow's Archiv*, Bd. 57, heft 1, 1873.

22. *Acute Bronchocele*.—LUDWIG describes (*Archiv der Heilkunde*, vol. xiv., No. 6) the case of a gentleman, who, after suffering from violent paroxysms of cough for some days, was suddenly seized with a swelling on the front of the neck, which impeded respiration. There was found to be an elastic swelling extending downwards from four centimetres below the middle of the thyroid cartilage nearly to the sternum, and to the sterno-mastoid muscle on each side. In the course of a few hours, it increased to the size of a child's head; the dyspnœa became more intense, and deglutition was difficult. There was no pulsation in the tumour. Soon, however, it began to diminish; and the next day it had entirely disappeared. Ludwig regards the case as one of acute hyperæmia of the thyroid body, but cannot assign a cause.—*Brit. Med. Journal*, April 5, 1873, from *Berliner Klin. Wochenschr.*, March 3.

23. *Histology of the Blood of the Insane*.—Dr. HENRY SUTHERLAND, in a paper read before the Royal Med. and Chir. Soc., April 22, 1873, presented the results of the microscopical examination of the blood of 143 lunatics. The conclusions he draws from the examination were as follows: That in the insane generally a leucocythæmic condition frequently exists. That any great increase in the number of white corpuscles at the expense of the red, and an absence of rouleaux from the blood of the insane, are conditions which generally indicate a very low degree of vitality. That in general paralysis, epileptic insanity, and masturbating insanity, the blood is more deteriorated, and the vitality is more lowered, in the male than in the female. That in mania, melancholia, and dementia, the blood is more deteriorated and the vitality is more lowered in the female than in the male.

24. *Treatment of Basedow's Disease.*—The three essential features of Basedow's disease are palpitation and frequent action of the heart, swelling of the thyroid gland, and exophthalmos. Its relations to chlorosis are obvious, as its occurrence in females chiefly, and its frequent association with irregularities of the menstrual function, show. Nevertheless it occurs in men, and even in children. Drs. EULENBURG and GUTTMAN, in speaking of the mode of treatment to be adopted, remarked that whilst formerly tonics were very generally employed with the object of improving the blood, as well as remedies that lowered the action of the heart, notwithstanding that experience demonstrated how little benefit was to be obtained by these means, in recent times the cure of the disease has been attempted by applying continuous electrical currents to the sympathetic in the neck. Dusch, it appears, was the first who adopted this means in a case which had long been otherwise treated without effect, and found that the application of from 10 to 20 elements reduced the pulse from 130 to 70, and even to 64 in the minute, the exophthalmos at the same time undergoing considerable diminution. MM. Guttman and Eulenburg tried the same means in 1867, and found that in a woman suffering from the disease, and having a pulse frequency of 108 to 130, with unusual tension of the carotids, galvanization of the cervical sympathetic with a very weak ascending current of only six or eight elements, a gradual fall of the pulse-frequency took place from 124 to 84, and even to 70, with coincident diminished tension in the carotid and radial arteries. This plan of treatment, however, was not continued long enough to cause much diminution in the size of the tumour of the thyroid or of the exophthalmos. Since then they have applied the current in four other cases, and in all with the effect of ameliorating the cardiac symptoms, but in none long enough to cause material improvement of the other symptoms. Chvostek has made numerous experiments on galvanization of the sympathetic in these cases, and in no less than thirteen of them has nearly effected a complete cure. In his hands the influence on the gland was well marked, whilst it was less distinct on the activity of the heart. Moritz Meyer also reports four cases where the thyroïdal tumour was by the same means almost entirely abolished. (*Die Pathologie des Sympathicus*; Eulenburg and Guttman, 1873.) *The Practitioner*, March, 1873.

25. *Phosphorus in Certain Forms of Disease of the Nervous System.*—Dr. DICKINSON has recently been experimenting clinically with phosphorus in cases of affections of the nervous system characterized by deficiency of nervous energy, and has obtained decided evidence of the value of this remedy (see *The Practitioner* for April, 1873). He recommends a method by which phosphorus can be given in a form at once active and inoffensive, namely, dissolved in oil or lard, and inclosed in a gelatine capsule; the dose is about $\frac{1}{30}$ of a grain, and it may be taken two or three times a day, always after food.

26. *Ergot of Rye in Hæmoptysis of Phthisis.*—Dr. F. E. ANSTIE has published (*The Practitioner*, Nos. for Feb., Apr., and May, 1873) a series of articles with cases illustrative of the efficacy of ergot in the hæmoptysis of phthisis. He thinks that he has now established the facts "(a) of the direct action of ergot in the cases which I have recorded; (b) of its superiority in several of these cases to other styptics that had been tried; (c) the probability, from physiological analogies, that ergot would act more universally as a checker of hæmoptysis than the routine remedies with which we are familiar; (d) also that it is perfectly safe for the purpose in view, and in this respect is superior to digitalis, which otherwise resembles it a good deal."

"One of the best proofs," he says, "of the reality of a supposed action of any drug is afforded when the effects, which were comparatively slight or dubious after the administration of the rougher preparations, become more marked and apparent in proportion as fewer and more concentrated preparations come to be employed in practice. Now this is precisely the history of ergot as a remedy for hæmorrhage. Used at first in the form of infusion or tincture, it was only moderately efficacious; and indeed, so late as 1870, Nothnagel¹ ex-

¹ *Arzneimittellehre*. Berlin, Hirschwald.

pressly states that which I have been endeavouring to show can no longer be considered true, viz., that ergot is not superior to acetate of lead, or sesquichloride of iron in hæmoptysis. But the liquid extract, given by the stomach, has given even better and more certain results, not only in my hands but in those of several others. And the hypodermic injection of Bonjean's ergotin (which I have used for other purposes, but not for hæmoptysis) has given still more excellent promise, more especially in the hands of Drasche, of Jamieson, and of Dr. Currie Ritchie of Manchester; the latter gentleman published an excellent paper on the subject in the *Practitioner* for December, 1871.

"Meantime there have sprung up other collateral illustrations of the effectiveness of ergot in producing contraction of the arterioles and moderating the heart's action: of which the most remarkable is Langenbeck's discovery of the therapeutic use of ergotine injections in aneurism. It is true that this latter subject is as yet not at all completely developed; but enough has been proved to strengthen materially the general mass of evidence in favour of the belief that ergot acts precisely in the manner in which we should desire a pulmonary hæmostatic to act. I of course do not say that we shall not possibly discover a yet more useful remedy for hæmoptysis, but at present we probably possess none equal to it. Over and above the important resource which ergot seems to afford when hemorrhage is actually dangerous in amount, and when such remedies as gallic acid, acetate of lead, or muriate of iron have failed, I think that ergot is likely to be the most appropriate of all hæmostatics for the hemorrhage of early phthisis, where it may be hoped that the lung has as yet undergone very little structural change. The prompt suppression of all oozing into the air-cells which, in view of the danger of phthisis *ab hæmoptoe*, it is so important to effect, can probably be in no way so effectually accomplished as by the employment of ergot.

"Nor do I prefer the gastric administration, although in the cases recorded I employed it. For getting the best results I can scarcely doubt that the hypodermic injection of ergotine is a decidedly superior method. But I was personally anxious to see whether the remedy would prove practically effective when given in a form which is much less troublesome, and consequently more adapted to every-day practice, than the hypodermic injection would be. I hope I have shown that it is effective in a very encouraging degree, and that the profession will soon come to recognize the preferability of a direct recourse to its use in hæmoptysis, instead of the routine employment of a series of astrigent remedies which are considerably less uniform in their action."

27. *Treatment of Elephantiasis by Compression.*—In the *Anfiteatro Anatomico Español* of Feb. 28, is described a case of elephantiasis Arabum occurring in a young man aged twenty, who came under the care of Dr. VELASCO, at Zaranz in Guipuscoa. The limb was greatly enlarged, the circumference at the centre of the thigh being about thirty-four inches, and at the calf of the leg twenty-four inches. The skin was rough and indurated, but otherwise not much changed in appearance. The only treatment adopted was the application of compression by means of a strong bandage four inches wide, applied spirally from the toes to the groin, and over it a strong linen legging. Under this treatment the limb regained its normal dimensions in the course of a year. —*London Med. Record*, April 2, 1873.

28. *Use of the Sulphites and Hyposulphites in Intermittent Fever.*—In an exhaustive treatise recently brought before the Royal Institute of Lombardy, Dr. G. FARALLI, after examining critically the results of all the therapeutical experiments that have been made until now with the sulphites, especially in intermittent fever, arrived at the following conclusions, which he considers to be definitive: 1. It is not shown that intermittent is of a zymotic character. 2. However, the sulphites in many cases cure intermittent fever, though their action is not so rapid and constant as that of quinia. 3. Their mode of action seems to depend on their reductive, rather than on their anti-fermentative, power. 4. The only result really due to them, and established by a number of accurate observations, is the greater rapidity with which they seem to combat

abdominal phenomena. 5. Their protracted use brings on a certain degree of anæmia, and thus favours the development of paludal cachexia. 6. Their prophylactic property, which had been imagined *a priori*, is not established by accurate observations, as is that of sulphate of quinia. 7. In the treatment of intermittent fever the sulphites are much less efficacious than cinchona and its preparations, and it is only when these have failed that recourse may be had to the sulphites. 8. Preparations of arsenic, which should seldom be used in miasmatic fever, are yet better than the sulphites for combating paludal cachexia. 9. Out of the three methods generally employed in the treatment of periodic fevers, the sulphites and hyposulphites, manifestly inferior to quinia, both as a prophylactic and a curative means, must be considered as even less efficacious than the preparations of arsenic.—*Lancet*, May 3, 1873.

29. *Propagation of Typhoid Fever by Milk*.—In the summer of 1872 an epidemic broke out in the village of Armley (in the borough of Leeds, England) which Dr. BALLARD, in an official report just published, proves, beyond reasonable doubt, was propagated through the medium of the milk supply. It will be remembered that a similar epidemic broke out at Islington, and which Dr. Ballard proved to be due to the same cause. (See No. of this Journal for Jan. 1871, p. 270.)

Dr. Ballard in his report of the epidemic at Armley (the *Lancet*, April 5, 1873), shows how remarkably the fever picked out the customers of the dairy-men, who is believed to have contracted the fever in a neighbouring locality five or six weeks before the epidemic began; how the largest consumers were among the earliest and the smallest among the latest attacked; and from the different facts stated and line of argument indicated he comes to the conclusion that the outbreak was due to the distribution of milk from the particular dairy of the infected dairyman, which milk had in some way become contaminated with the poison of enteric fever. He then proceeds to show how this contamination may have occurred, and proves that a well in the dairyman's yard used for dairy and domestic purposes was liable to be contaminated by the contents of a privy and a dung-hole, into one of which, if not both, the discharges of the dairyman when ill would be thrown; and he further shows that the sudden outburst of fever occurred within a fortnight of the period when the well would most probably have become polluted in the foregoing manner, while the time of its cessation followed the closure of the well at an interval consistent with the theory of the polluted water (added doubtless to the milk) being the efficient agent in the propagation of the fever.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

30. *Development of Cancer of the Skin*.—Dr. WM. H. CARMALT, of New York, writes us, that the notice of his paper in *Virchow's Archiv* on this subject, copied in our preceding number, page 546, from the *London Medical Record*, does not fairly represent his views, and he has favoured us with a copy of his paper which we had not previously seen.

The aim of Dr. C. in his paper appears to be to show—

1st. That cancer frequently originates from the epithelium of the hair follicles.

2d. That it does not originate from the endothelium of lymph vessels as alleged by Köster.

3d. The wandering capability of cancer cells, which though suggested before, he claims to have been the first to describe from actual observation. He has seen in two cases in sections of a freshly cut into cancer of the breast, a throwing out and retraction of processes by the cancer cells, *although* there was not noticed any *absolute change* of place as is seen in white blood corpuscles.

In an instance of round-celled sarcoma of the axilla he observed a similar

amount of motion in the proper elements of the tumour. In all cases the observations were made on scrapings obtained by a knife heated to blood temperature, placed on a Stricker's warming stage in a drop of the serum of the patient's blood.

31. *Renal Abscess containing Calculus relieved by Operation.*—An interesting case of this is related (*Ed. Med. Journ.*, Apr. 1873), by Dr. THOS. ANNANDALE. The subject of it was a farmer, æt. 63, who had for nearly twelve months suffered from uneasiness in right lumbar region, to which he had given but little attention. He had been under treatment for gastric and renal derangement, by Dr. DEWAR for six weeks, when Mr. A. was called to see him in consultation on the 29th April.

There was at this time tenderness on pressure over the lower half of the right kidney, and below it in the direction of the ureter. A very slight fulness in the same region was noted, but no marked swelling could be detected. The patient was much emaciated and exhausted from the irritative fever, the signs of which were most apparent. No fluctuation could be felt, and the introduction of a fine trocar and canula into the right lumbar region gave no result.

Mr. A. saw patient again 23d May, when his "local symptoms were unchanged, except that through the anterior abdominal wall there was a feeling, not very distinct, of deep fluctuation immediately below the region of the affected kidney. His general symptoms were much worse, and he urgently begged me to try and do something for his relief, as he felt sure that he could not live twenty-four hours longer in his present state.

"After a careful consideration of his case, my colleague and myself felt very sure that there must be suppuration in the region of the right kidney, and as the patient's condition seemed hopeless unless relief was given, it appeared to us that an exploratory incision was the proper and justifiable proceeding. The patient's consent having been readily obtained, chloroform was cautiously administered until complete anæsthesia was produced. I then made an incision through the abdominal wall on the right side, in the situation and direction of the incision employed for the ligature of the common iliac artery, except that it did not extend quite so high up. The peritoneum having been exposed, it, together with the abdominal contents, was carefully pushed inwards towards the middle line, until the outer edge of the psoas muscle was reached with the finger. On endeavouring to separate the peritoneum still further towards the upper end of the wound, it was found to be firmly adherent at this point; but after a little careful scratching with the finger-nail the adhesion gave way, and the finger passed into a cavity outside the peritoneum, from which there was a flow of very offensive pus. A little further separation with the finger caused the escape more freely, and also determined the presence in the abscess cavity of a small calculus, which was seized with forceps and removed. This calculus was the size of a horse-bean, oval in shape, and composed principally of phosphate of lime, with a small quantity of the triple phosphate, and a trace of animal matter.

"The abscess having been emptied, its cavity was sponged out with a solution of sulphurous acid, and the edges of the abdominal wound were brought together with sutures, a free opening, however, being left at its lower end for the better escape of pus or other fluids from the cavity.

"The operation gave great relief to the patient, and his progress was most satisfactory up to the fifth day, when for the first time a small quantity of thin feculent matter was noticed to pass by the wound; and there was some pain in, and swelling of, the abdomen, with an increase of the pulse and a rise in the temperature. These symptoms passed off after the removal by Dr. Dewar of a large quantity of hard fecal matter which was obstructing the rectum, and the patient without any further drawback made a complete recovery. Small quantities of fecal matter continued to pass by the wound for nine days after the operation, but from this time no further discharge was observed. At the end of a month the patient was able to walk about, and up to the present time he remains perfectly well and strong."

Mr. A. remarks that the case was evidently one of renal calculus, which had

given rise to suppuration and ulceration, and had in this way escaped from the kidney. The abscess passing downwards was preparing to empty itself into the ascending colon or cæcum : and had the operation not been performed, and the patient lived, it would in all probability have shortly opened into the intestine, and the pus have been discharged by the rectum.

"In the treatment of this case, I only now regret that the exploratory incision was not made sooner ; for, if it had been the patient's sufferings would have been earlier relieved, and the fistulous communication with the intestine prevented.

"I preferred making the incision through the anterior abdominal wall instead of in the lumbar region, because the fluctuation, although never very distinct, could only be felt from the former situation, and the introduction of the trocar deeply into the lumbar region failed to obtain any results. The rapid and complete closing of the fistulous opening was an interesting point in the progress of the case, and proves, I think, that the opening of communication with the intestine was small, and that the free exploratory incision, by allowing the pus to escape readily, tended to prevent further destruction of the intestinal wall."

32. *Chronic Cystitis with Putrescent Urine.*—Mr. W. H. DAY records (*Brit. Med. Journal*, May 10, 1873) an interesting case of this in a man æt. 71, who had suffered with prostatic disease for ten years, and during the past two years the catarrhus vesicæ had been very severe. The urine contained large quantities of pus, was strongly ammoniacal, horribly offensive, and caused such burning in the urethra that he had to walk about in the night for hours tightly grasping the penis to relieve his sufferings. He said in his own words—"What with the pipe being so hot, and the stench of the water, I shall go mad if you don't do something to relieve me." The usual remedies had been of no avail. Thinking that carbolic acid might possibly modify the action of the mucous membrane of the bladder, Mr. D. injected February 6, 1873, a pint of warm water containing half a drachm of carbolic acid (1 in 233) into the bladder through a double catheter. After remaining a few minutes, it was allowed to run off again. No pain was experienced at the time. Two hours after, he had great abdominal pain, with urgent desire to micturate, and the water forced itself through the urethra in such quantities that he avowed he must have passed two or three gallons in the night. The next morning he still complained of the abdominal pain which was evidently caused by distention of the bladder. Mr. D. introduced a catheter and drew off a pint and a half of clear amber-coloured urine, free from smell of any kind, with complete relief to the pain. Excessive diuresis continued for a few days. The burning pain and putrid urine have been entirely absent now for three months.

Subsequently the patient had one or two indications of a return of the symptoms and he was afraid he might soon require a repetition of the operation.

33. *Hydrate of Chloral in Traumatic Tetanus.*—Dr. VAN SOMEREN, of Madras, has recently observed some very favourable results from the use of chloral in cases of traumatic tetanus occurring in the Madras Hospital. Even when recovery did not follow the employment of the drug, the tetanic spasms were manifestly controlled. Dr. Van Someren relates four cases, of which two were cured. In the first case the tetanus supervened upon a severe burn in a boy, aged 14. The hydrate of chloral was given in the dose of eight grains at frequent intervals, and its administration was followed by decided relief of the tetanic symptoms, but eventually the patient died of pulmonary disease and diarrhœa. The second case followed an injury to the eyebrow. Trismus supervened five days after the accident, and after a purgative had been given, hydrate of chloral was administered in doses of fifteen grains every six hours. The patient rapidly improved, and, four days after the commencement of the treatment, he left the hospital. The third case was that of a child, aged 3, who was run over and sustained an injury to the toes, followed by tetanus. After the bowels had been opened by purgatives, hydrate of

chloral was given every three hours in three-grain doses. The treatment was only partially successful and the child died, but it is stated that tetanus had existed two or three days before the treatment was commenced. The fourth case was that of a man who had received an injury in the foot, fracturing four metatarsal bones. Some days after the accident tetanus supervened, and after free purging, hydrate of chloral was given in fifteen grain doses every three hours. Although the symptoms were obstinate, yet, by a continued use of the remedy the tetanic rigidity gradually diminished and finally disappeared. Dr. Van Someren thinks that a more heroic administration of the drug than that which is usually recommended would decrease the chances of a fatal issue in tetanus.—*Brit. and For. Med. Chir. Rev.*, April, 1873, from *Madras Monthly Journal*, May, 1872.

34. *Electrolysis in Surgery*.—Dr. GROH, Prof. of Clinical Surgery in the University of Olmutz, has made an important contribution to electro-surgery, in which he relates the results of his clinical experience of the effects of electrolysis. He has modified the method of application introduced by Dr. Althaus, inasmuch as he does not make exclusive use of the negative electrode, but inserts the positive likewise into the tumour. The author uses Frommhold's battery, which consists of zinc, lead, and platinum moor; and resorts to a powerful current applied for a short time under chloroform, or to a gentle current applied for days and nights consecutively. The needles which he employs are either of steel, zinc, or platinum; and he finds it advantageous, where the parts which are to be destroyed are highly vascular, to use zinc needles which are dissolved at the positive pole by the nascent chlorine, so that there is not only primary but secondary electrolysis. The eschar at the positive pole looks under these circumstances like one produced by ordinary chloride of zinc paste; viz., it is greyish white, firm, and dry. At the negative pole there is a rapid development of foam (hydrogen), which generally appears white, and more rarely brownish red, this chiefly where the tissues are very vascular. The tissues become more tense by the quantity of gas which is set free, and the epidermis or mucous membrane becomes raised; discolouration of the tissues appears at first round the needles, but afterwards at a distance, and they assume a dark brown or livid tinge. Where this is distinctly perceptible, there is generally so much destruction that the tissues do not recover themselves after the application has been discontinued. The author thinks it important to introduce the positive needle first, and the negative afterwards, inasmuch as the former becomes so firmly glued to the tissues after the current has commenced to act, that it is very difficult to push it forwards.

Groh considers the following to be the *advantages* of electrolysis. Very extensive tumours may by its aid be destroyed without the loss of a drop of blood, which is of great importance in cases where there is prostration of strength. In three of his patients, the use of electrolysis enabled him to do without resection of the lower jaw, which otherwise would have been necessary, and would have given rise to great disfigurement. In a case of cancer of the rectum, where subcutaneous injection of morphia produced only slight and temporary relief of the intense pain, and where there was a most offensive smell from the ulceration both smell and pain disappeared after the first electrolytic application. In a case of epithelioma of the lip, where the right submaxillary gland was considerably swollen, this swelling was dispersed a few days after one electrolysis. Finally, all cases progressed favourably, without any bad accidents. The pain never continued beyond the application itself; there was only slight local and general reaction; the eschars which had been formed were rapidly thrown off, there was copious granulation, and such an amount of cicatricial contraction as to cover the loss of substance caused by the removal of the growth.

The *drawbacks* of electrolysis are the following. The batteries are expensive; it is not always easy to introduce the needles so as to destroy as much as possible in the shortest time; where extensive tumours are to be destroyed the applications must be frequently repeated or prolonged for a considerable time. Groh thinks that surgeons will gradually find special indications for electrolysis as for any other operative procedures. Where the knife is the more simple in-

strument, and equally devoid of danger, they will not think of resorting to electrolysis, but will only use the latter where it either appears to offer special advantages, or where no other means can be employed.

The author has described all the cases which he has thus treated, and brought them into two classes, viz., first, where a powerful current is used for a short time; and, secondly, where a gentle current was used for a prolonged period.

1. Ten cases of nævus; all cured. Groh thinks electrolysis, from the absence of danger, and the avoidance of bleeding and disfigurement, preferable to any other operation hitherto devised for nævus. Two cases of lupus; four cases of sarcoma, cured; eighteen cases of cancer, chiefly epithelioma of the lip, thirteen cured, two improved, in two no results, one death. In these cases it is necessary to destroy not only the growth itself but also its next neighbourhood, in order to avoid subsequent infection. In some of these cases, only one, in others two or more applications were necessary. In one case there was not only ulceration of the lower lip, but also of the whole chin; the corresponding part of the lower jaw was covered with detritus; some teeth had fallen out, and those remaining were so loose that they could be extracted by the finger. Both submaxillary glands were engorged. Four applications were sufficient to produce destruction of the tumour, which was followed by good cicatrization.

2. Prolonged electrolysis with a feeble but perfectly constant current, such as is produced by Daniell's battery, does not necessitate the administration of chloroform, and causes hardly any pain at all. A tumour of any size may be gradually destroyed by this proceeding. The author relates three cases: one of myxosarcoma of the left leg, of the size of a child's head, in which the current was made to act from Jan. 27 to Feb. 13; suppuration supervened, and the patient was discharged cured on April 15: another case of osteo-sarcoma of the right thigh, larger than a child's head, which also yielded, although not so rapidly, as several relapses took place: and a secondary cancerous tumour of the mamma, which was quickly removed.—*London Med. Record*, March 5th, 1873.

35. *Femoral Aneurism closely simulating Malignant Disease*.—Mr. G. A. GLOAG relates (*Brit. Med. Journal*, May 24, 1873) an instructive case of this, occurring in a man æt. 37, of cachectic appearance, who came under Mr. G.'s care November 5, 1872, for a tumour which occupied the anterior and inner region of the upper half of the right thigh. "It was bounded above by Poupart's ligament, and had a circumference of $27\frac{1}{4}$ inches at its centre, the circumference of the sound limb at the same part being 16 inches. The tumour had a tense elastic feel and a shiny appearance, the superficial veins were enlarged and prominent, and the disease appeared to have involved all the structures of the limb. No *bruit* or pulsation could at any time be discovered in it. It gradually increased in size, and on December 20, had attained a circumference of 30 inches. The patient suffered intense pain, which was of a paroxysmal character, and required large doses of morphia or chloral for its relief. During severe pain I found that the tumour became harder, and that it increased in circumference to the extent of half an inch, and again subsided as the pain diminished to its former dimension. The limb was œdematous below the tumour, the result of venous obstruction. Although there were no glandular enlargements nor symptoms of secondary deposit, the cachectic appearance of the patient, the intense pain he suffered, and the rapid growth of the tumour, together with the total absence of pulsation or stethoscopic sound, induced me to believe the case to be one of medullary cancer, for which operative interference was unjustifiable. About six months previously to the time when the patient came under my notice, a tumour, about the size of a small egg, appeared on the upper and inner side of the thigh, accompanied with such severe pain that the patient was unable to follow his occupation, and was obliged to remain in bed. It grew rapidly from week to week, and the pain increased in proportion."

The man died December 28, and Mr. G. gives the following account of the *post-mortem* made the next day: "An incision was made from the anterior superior spine of the ilium to the symphysis pubis, and another from the centre of Poupart's ligament down the front of the thigh. The latter was afterwards

prolonged across the inner aspect of the knee, so as to expose the upper part of the popliteal space. On making the longitudinal incision, the parts gaped widely, and a thin layer of muscular tissue was exposed. On dividing this the length of the thigh, a mass of clot presenting various shades of colour appeared. Some of it was partly laminated and of a firm consistence, and needed the assistance of the knife for its removal. Nearly fourteen pounds weight of clot was turned out of the cavity, which was bounded anteriorly and to its sides by the skin, a small amount of subcutaneous fat, and a thin layer of muscular tissue; above by Poupart's ligament; below by the quadriceps extensor tendon; and behind by the eroded femur, the abductors, and vastus externus muscles, in a partially disorganized state. The integument showed no symptoms of thinning in any part. The anterior crural nerve was found deeply imbedded in the clot, and was the only recognizable structure in the tumour. An incision was made from the middle of Poupart's ligament to the umbilicus, and thence to the sternum. The kidneys were in a healthy condition; the liver was enlarged, and showed appearances of waxy degeneration. On cutting across the aorta, and dissecting the external iliac artery downwards, it was found that an aneurism existed on the right superficial femoral artery. The femoral artery was then dissected upwards from the popliteal, as well as possible, to the tumour, and the mass removed for preservation. It consisted of a quantity of laminated fibrine, situated in Scarpa's triangle, where it appears to have burst, and this, I believe, took place before the patient applied for medical relief, at which time the tumour was localized, and about the size of two fists. The epigastric and circumflex ilii arteries were considerably enlarged. The upper part of the femoral artery leading into the tumour was pervious; that immediately below it and leading from it was impervious." . . . "This case clearly shows that cachexia, rapid growth, and severe pain must not be accepted as sufficient evidences of cancer. In reviewing the history of this case, there are some points which should have suggested its non-malignant character; namely, the absence of lymphatic enlargements, or symptoms of secondary deposit, and of any tendency to ulceration of the skin over the tumour; the favourable family history; and the fact that the tumour was definitely bounded superiorly by Poupart's ligament."

36. *Inguinal Hernia Coincident with a Ruptured Aneurism, rendering the Diagnosis difficult.*—MR. C. F. MAUNDER relates (*Med. Times and Gaz.*, May 24, 1873) the following interesting case of this. "A male, æt. 70, the subject for many years of reducible scrotal hernia of the left side, suddenly experiences pain in the left groin and while the hernia is down. By manipulation reduction is effected, and vomiting sets in, and persists for many hours up to the moment of my seeing him. He is now pale and exhausted. The evidences of old hernia at the groin, short of the protrusion itself, are ample, and the finger finds nothing unusual in the inguinal canal. On putting the patient erect, nothing protruded, even when he coughed. Suspecting either *reductio en masse* or ruptured neck of sac and false reduction, exploration of the region was practised. Nothing explanatory of the symptoms was found, but the finger in the cavity of the belly detected a rounded swelling behind the hypogastric region, but not coming forward to the anterior abdominal wall as the distended bladder does. A catheter introduced proved that the swelling was not bladder. It then occurred to me that the tumour might be an hydatid cyst, I having, on a former occasion, tapped per rectum such a cyst, which, developed in the pelvis, caused retention of urine. On making a digital examination per rectum I failed to discover the swelling, and withheld the trocar, and, as the sequel will show, fortunately so too. The patient died, and at a post-mortem examination he was found to be the subject of a ruptured aneurism. The hernial protrusion had been reduced by taxis, and at the same moment a quantity of blood had been poured out behind the peritoneum, filling the iliac fossa and part of pelvis, and, coming forward to the anterior abdominal wall, had prevented the redescend of bowel. Strangulation had never existed."

37. *Dislocation of the Femur into the Thyroid Foramen.*—DR. A. DIXON

WAGNER relates (*Canada Med. and Surg. Journal*, May, 1873) a case of this in a girl ten years of age, in which reduction was effected, after three trials, eight weeks after the injury occurred. The reporter believes that in time the patient will regain the entire usefulness of the limb.

38. *Intra-Capsular Fracture of the Neck of the Thigh Bone*.—Dr. BIGGER presented to the Pathological Society of Dublin, Jan. 18th, 1873, a specimen of this. A gentleman fifteen months ago fell in the street, his hip coming against the curbstone. There was much bruising and œdema, and fracture was not suspected. The patient recovered, and died a few days ago from another cause. The capsule of the joint was intact. The head of the bone was detached from the lower portion of the neck, on which it freely played, a false joint having formed.

The same evening Dr. BENNETT showed a specimen, the clinical history of which was wanting. The shortening of the limb was fully one inch and a half. The great trochanter was approximated to the crest of the ilium, and the joint was fixed by the interlocking of the upper fragment with the rim of the acetabulum, which had undergone absorption. There was a bony deposit in front of the trochanter, and a spiculum of bone in the psoas tendon. The neck had altogether disappeared from the upper fragment, and nearly from the lower. The fragments were united by strong fibrous tissue.—*Brit. Med. Journ.*, March 1, 1873.

39. *Removal of a Cystic Bronchocele*.—Mr. ARTHUR E. DURHAM gives (*British Med. Journ.* March 15th, 1873) a short notice of a case in which he removed a "cystic bronchocele" from the neck of a woman thirty-six years of age, but looking much older. The tumour had first appeared five years previously, after a blow; it had grown until it had become as large as a nut, and had remained about that size for a considerable period. About a year ago it had begun to increase very rapidly, and latterly having attained the size of a large orange; it had very seriously impeded her breathing. Various methods of treatment had been tried, but without good effect, and the health and strength of the patient were quite broken down. She was much wasted and very weak, and suffered from severe dyspnoea and some difficulty in swallowing. Under these circumstances she was admitted to Guy's Hospital, and Mr. Durham determined to attempt the removal of the tumour.

A vertical incision having been made through the skin, just on the left of the median line from over the hyoid bone to over the upper border of the sternum, two catgut ligatures were applied, one to the upper and one to the lower part of the anterior jugular vein, which ran down in the middle line over the tumour, and which was very much enlarged and distended. The fasciæ and connective tissue were next divided, layer by layer, until the tumour was reached; then by aid of the finger and a blunt instrument, with a few occasional touches of the knife, the tumour was very readily turned out and removed. It was only loosely connected with the larynx and trachea, but had some firm, fibrous connections with each lobe of the thyroid body, especially with the left. On the right side its lower border rested in the bifurcation of the innominate artery. There was very little blood lost during the operation (not more than two or three drachms). The wound was closed by sutures, etc. When removed, the tumour measured ten inches and a half in circumference. It was found to consist of hypertrophied thyroid body structure, including numerous minute cystic dilatations, and almost entirely surrounding a large irregular cystic cavity, which contained about five ounces of fluid. This fluid was serous in character, deeply tinged by blood-colouring matter, and containing an immense quantity of cholesteroline. The tumour appeared to be the whole isthmus of the thyroid body in a diseased condition. The right and left lobes of that body were seen, but appeared healthy.

Mr. DURHAM states (*London Med. Record*, April 9th, 1873) that the after progress of this case was most satisfactory. The day following the operation the patient was perfectly comfortable, breathing much more freely than she had done for months previously. The improvement in her complexion and gen-

eral aspect was very striking. The wound healed by primary union, scarcely a drop of pus appearing even in the situation of the sutures. Health and strength were rapidly regained, and the patient is now well.

40. *A Case of Amputation at the Hip.*—Mr. BARWELL reported (*Lancet*, April 5, 1873) to the Royal Medical and Chirurgical Society the following case:—

Caroline L.—, aged seven, was admitted into Charing-cross Hospital under Mr. Barwell's care September, 1872. She had previously been under the care of Mr. Hancock with severe hip disease, and that surgeon had in the early part of 1871 excised the head of the bone, but during the operation the thigh, a mere shell of bone, had broken in two places. She went out after some months with bony union, but with open sinuses. When readmitted at the above date she was emaciated and feeble; there were several open sinuses; the liver was much enlarged. After watching the case for some time, the operation was decided on, and performed by Mr. Barwell on the 2d of November. Hardly any blood was lost; the limb was almost devoid of muscles, the bone carious and inflamed throughout. The child rallied, and after a time (corresponding with the occurrence of smart diarrhœa) the liver began to diminish in size. On the 1st of February the child went out with the liver much smaller. Certain deductions concerning the states of liver in different phases of disease were given.

Mr. Thomas Smith said he should have been inclined to refrain from operating with such a condition of liver. The decrease in the size of the liver after the operation was interesting. He had had a patient in the Children's Hospital who had both the liver and the spleen greatly enlarged, so as almost to fill the whole abdominal cavity. Whilst suppuration was going on the liver became smaller, and returned to nearly its normal size. The spleen, however, remained as large as before. It had been proposed to treat the patient with potash salts, according to the views of Dr. Dickinson of the pathology of this enlargement in suppuration, as arising from dealcalinity of the blood. This, however, was not done, but the liver spontaneously decreased. There was said to be no deposit, only the liver, not going through its nutritive changes as usual, became full of cells in various stages of growth and degeneration; and the size of the liver was due to the retention of these. He would like to ask Mr. Barwell if he has ever held the abdominal aorta when thus operating.

Mr. Barwell, in reply, said that certainly if operating on an individual with a large and well-nourished limb, he would have the abdominal aorta held. In this case the limb was emaciated and Mr. Bellamy passed in his hand under the flap, and at the same time compressed the aorta; only a little venous blood escaped, not so much as two ounces. The enlargement of the liver, Mr. Barwell thought, was due to fatty degeneration, and that need not preclude any operation. If it depended on amyloid degeneration he should not like to operate. When bones were inflamed and carious, the liver was more likely to be fatty; if largely necrosed, most commonly there was amyloid degeneration.

41. *Amputation without Preliminary Compression.*—M. NERVEU furnishes an account of the practice adopted by M. VERNEUIL of dispensing with all digital compression in amputation of the limbs. In his clinical lecture on the subject at La Pitié, M. Verneuil observes that compression of the arteries may not only be difficult from the position of the vessel, but requires an assistant of great intelligence, coolness, and of vigour if the compression is to last long. Such a one may be obtained in hospitals, but is seldom to be met with in the country, and still less often during the time of war. In some patients, too, compression is difficult or impossible; but, most important of all, its employment not infrequently induces phlebitis of the portion compressed. M. Verneuil first mentioned the subject in the article "Aine" in the *Dictionnaire Encyclopédique*, 1871, and has up to the present time pursued the method in twenty-one operations, viz: eight amputations of the shoulder, three of the thigh, two of the arm, six of the leg, and two of the hip-joint. All these have shown that, while the method exacts intimate knowledge of the position of the

arteries, it is capable of being carried out without skilled assistance and without hemorrhage, while it prevents the occurrence of inguinal phlebitis.

In order to suppress preliminary compression in amputation we have only to apply to this operation the rules which guide us in the removal of tumours, in which, as compression cannot be employed, we tie the large vessels as they present themselves. In the flap operation, after having by the first incision divided the skin and cellular tissue, M. Verneuil proceeds to search for the artery, dividing slowly and gradually the muscles which cover it. When it has been exposed, he passes two ligatures around it, and divides it between these, in order to prevent the afflux of blood by the lower end. The large veins, which are liable to a more or less important reflux, are also tied. The ligatures accomplished, the flaps are finished, and the bone denuded, and the operation completed in the ordinary way. Another mode of procedure is also of easy execution. Having cut his first flap, he denudes the bone in front and at its sides, and, passing either a pair of curved scissors or a curved grooved director between the bone and the subjacent soft parts, he saws through the bone before occupying himself with the second flap, which he makes by small incisions from without inwards and from within outwards, tying the vessels as he proceeds.—*Med. Times and Gaz.*, April 26, 1873; from *Gazette Méd. de Paris*, March 29.

42. *Excision of the Extremity of the Humerus as a Remedial Measure in Cases of Ankylosis of the Elbow-joint resulting from Injury.*—Dr. PATRICK HERON WATSON states (*Ed. Med. Journ.* May, 1873) that in his experience the results of excision of the elbow-joint in cases of ankylosis resulting from injury, have not been so favourable as where disease has been the occasion of operative interference. "On the one hand, too great a degree of mobility in every direction has been the result; on the other, the union between the divided ends of the bones has been more complete than could be desired, and the movements have been commensurately imperfect."

Hence he was led in the summer of 1871 to operate on a boy by a new method which he conceived "would fulfil every indication, so far as the preserving muscular attachments was concerned, and at the same time enable to effect the removal of as much of the osseous textures as might appear to be necessary. The speculative reasonings which led to my adoption of this method were these:—

"It was quite obvious that, as in most cases of fracture into the elbow-joint, the humerus was the bone alone affected; no changes in the osseous structures of the radius and ulna necessarily resulted from any injury the humerus had sustained; nor even should the radius and ulna be involved in the injury, did the resulting efforts at repair constitute a condition which implied any need for their removal by operation. It was also obvious that the removal of the upper extremity of the ulna necessarily impaired the perfection of the muscular attachments, viz., of the *triceps* and the *brachialis anticus*, and indirectly the power of the *biceps* in flexing the forearm. It was clearly, therefore, very desirable that neither the radius nor ulna should be interfered with, if removal of the extremity of the humerus alone would suffice to remedy the ankylosis.

"The operation I devised for carrying out these theoretical requirements consisted in the following steps: (1) A linear incision to be made over the ulnar nerve to the inner side of the olecranon process rather longer than that usually employed in the ordinary excision of the elbow by linear excision. (2) The ulnar nerve to be turned over the inner condyle by careful dissection. (3) A probe-pointed bistoury to be introduced into the elbow-joint in front of the humerus, and then behind that bone, and carried upwards, so as to divide the upper capsular attachments in front and behind. (4) A pair of bone-forceps to be next employed to cut off the entire inner condyle and trochlea of the humerus, and then introduced in the opposite diagonal direction, so as to detach the external condyle and capitulum of the humerus from the shaft. (5) The truncated and angular end of the humerus to be cleared, turned out through the incision, and smoothed across at right angles to the line of the shaft by means of the saw, whereby (6) room might be afforded, so that partly by twist-

ing, partly by dissections, the external condyle and capitulum are removed without any division of the cutaneous tissues on the outer side of the arm.

"This operation, it will be observed, by a single linear incision upon the inner side of the arm, enables the operator to drain efficiently the entire area of operation, and through an incision of very moderate limits to remove the entire expanded extremity of the humerus, without interfering with any muscular structures, except those of the forearm, which take origin from the osseous tissues actually excised. The result in this instance was perfectly satisfactory, the movements of the forearm being restored so as to maintain a degree of muscular power not usually observed in cases of ordinary excision of the elbow."

Dr. W. has since practised this mode of operation five times (six in all), and he states that "with a single exception a satisfactory result accrued immediately from this operation. In this single case when an attack of osteomyelitis supervened upon the operation, and osseous union was threatened between the humerus and bones of the forearm, the secondary removal of a further slice of the humerus afforded an ultimately satisfactory issue.

"The merits of this operation, which, so far as my observation and reading go is an original one, consist—(1) In leaving the attachments of the *triceps* and *brachialis* undisturbed, affording therefore a degree of leverage in the movements of the forearm, which cannot be attained when the olecranon, or any portion of the upper end of the ulna, is interfered with or removed. (2) In limiting the area of operation almost exclusively to within the capsular ligament of the elbow-joint, which seems to secure more speedy healing of the wound than would otherwise occur. (3) In securing, by the line of incision being internal and posterior, less ultimate surface deformity, a more direct drain for discharge, and a more ready access to the ulnar nerve than by any other method.

"One objection only can be taken to this mode of procedure, viz., that it does not afford a ready access to the external lateral ligament of the elbow-joint; this, however, is of trivial importance, if the plan of procedure I have laid down be rigorously carried out in the division and removal of the end of the humerus, viz., 1. The oblique division of the condyles of the humerus from above downwards, so as to cut through the articular surface by means of bone-pliers between the trochlea and capitulum of the humerus. 2. To cut off the capitulum and external condyle obliquely from the shaft by means of pliers applied from below upwards. 3. To turn out the end of the shaft and cut off as much of its truncated and conical extremity as may be deemed requisite; and, lastly, to dissect and twist away the capitulum and external condyle from their remaining ligamentous and other attachments.

"It may be urged, that while this may be easy enough when there is only partial rigidity of the elbow-joint, it is impossible to effect it in cases of complete and absolute ankylosis of the elbow-joint. But such an objector must not fail to recollect, that absolute ankylosis of the osseous kind is not a common result of fracture into the articulation, especially when passive motion has been attempted to be kept up after the accident; that in most of these cases it is rather due to the altered form of the osseous surfaces resulting from the fracture and displacement, and that at most the ankylosis is usually fibrous in its character.

"Again, even were it present, forcible flexion and extension under chloroform will, in the great majority of cases, effect such a degree of solution of continuity as will enable the operation to be carried out in the manner already described without any real difficulty. Should any case occur of very dense osseous union of the articular surfaces, rendering the risk of fracture of the olecranon or of the shaft of the humerus, a reasonable danger possibly involved in such strenuous effort, then a transverse section of the humerus with bone-pliers through the condyles, excision of a portion of bone above this level, and piecemeal excision of the ankylosed condyles themselves, by means of the forceps and gouge, would afford an alternative means calculated to remove any ordinary difficulties; while the conversion of the operation into a complete excision of the elbow-joint may always be had recourse to should insuperable obstacles be found to prevent the execution of the more limited resection."

43. *Excision of Elbow-joint.*—Dr. J. BELL exhibited to the Med. Chir. Soc. of Edinburgh, a little girl upon whom he had performed this operation. The joint had almost perfect flexion and extension, and there might be seen on each side a fair condyle and a fair olecranon, notwithstanding no periosteum had been left.—*Edin. Med. Journal*, May, 1873.

44. *Advantages of Circumcision from a Surgical Point of View.*—Dr. CADELL read a paper on this subject before the Med. Chir. Soc. Edinburgh. He considered it in four aspects: 1. In infancy. 2. In boyhood. 3. In adult life. 4. In old age. He described:—

1. The local and constitutional disturbance which may be set up by a long prepuce in infancy, and showed how these might be immediately relieved by circumcision. He read notes of a case, and also referred to those of Mr. BRYANT, illustrating the effects of an adherent prepuce on the urinary organs, and the relief obtained by circumcision.

2. In boyhood, he believed that a long prepuce, by imprisoning the secretion from the glans, might be an exciting cause of masturbation; and if there was an hereditary disposition to nervous affections, epilepsy and insanity might be thereby induced.

3. In adult life, circumcision would facilitate cleanliness, diminish the secretion from the glans, so that the great cause of non-venereal excoriation would be removed, and thus render the mucous surface less susceptible to the venereal poison.

4. In old age, he cited Mr. Hey's opinion, that a congenital phimosis was an exciting cause of cancer in the penis.

In conclusion, Dr. Cadell remarked that he would strongly recommend circumcision in boys between infancy and puberty, whenever a congenital phimosis caused them the slightest inconvenience.

Prof. LISTER said the cases alluded to by Dr. Cadell, of irritation caused by adherent prepuce, must be admitted to be of great interest. They knew that where adhesion existed there was often an accumulation of secretion, and they could understand that to be a cause of irritation. He should like to have it clearly brought out how far the symptoms in these cases were attributable to that cause, as distinguished from mere length of the prepuce. Though all would allow that cases of phimosis ought to be subjected to operation, it ought to be considered whether circumcision was the best that could be done. The object could be obtained without mutilation. Mr. JORDAN, of Birmingham, had written an interesting paper on the subject, showing that a perfectly natural condition of things might be obtained by the simple means of notching the ring of skin to the requisite extent, and then dividing the mucous membrane up to the *corona glandis*, and, avoiding all use of stitches, simply have the part drawn backwards and forwards twice every day. As regarded the question of malignant disease, he might have been unfortunate, but he had now seen a large number of cases of cancer of the penis, not one of which was associated with phimosis.

Dr. J. BELL said his experience in regard to circumcision was in cases of long standing and perfectly incurable nocturnal enuresis by small children who were in the habit of wetting the bed. In as many as four or five cases he had succeeded in effecting a perfect cure, by simply removing the redundant portion of the prepuce. In one case, a very bad case, a poor little fellow made his water first in the prepuce, which was like an orange at the end, and then he got rid of the water by squeezing it with his hand, the water coming out by a small aperture. That case was in George Watson's Hospital, and it became a question with the managers how to provide the necessary bedding for the boy. The operation performed was very simple, and was a complete cure. He (Dr. Bell) had very little experience of adherent prepuce; cases of adhesion of the prepuce were not so common as those of long prepuce.

Dr. HALLIDAY DOUGLAS said, that several years ago he was waited upon by a gentleman who had been married a few days before, and who had failed to effect connection. He was labouring under a very tight phimosis. He had never experienced any inconvenience during his life of twenty-five or twenty-

eight years. He (Dr. Douglas) transferred him to Mr. Syme's hands, and within twelve months there were twins born to him. Another curious fact in this gentleman's history was this: In early life his brother had been relieved of phimosis, and three of his children, nephews of the first gentleman, had required to have the operation performed.

Dr. WATSON was glad that the conclusion to which Dr. Cadell had arrived was, that where an elongated prepuce was a source of annoyance, it was right to relieve the person by removing it. As regarded the question of the comparative frequency of venereal complaints among persons who had been circumcised and those who had not, he might refer Dr. Cadell to a paper which appeared in the *Medical Times and Gazette*, 1st Dec. 1855, by Mr. J. Hutchinson, in which it was shown that at the Metropolitan Free Hospital, situated in the Jews' quarter, in London, in the year 1854, the proportion of Jews to Christians among the out-patients was as *one to three*—at the same time, the proportion of cases of syphilis in the former to the latter was only as *one to fifteen*. Yet, that this was not the result of any higher degree of morality on the part of the Jewish population was obvious, because fully one-half of the cases of gonorrhœa occurred in Jews. This preventive influence of circumcision, as regards chancreous infection, led to hereditary syphilis being rarer among the children of Jews than of Christians. . . . He was surprised that Dr. Cadell did not quote that greatest of all authorities on such matters, viz., Dr. Ricord, who had said, in one of his published clinical lectures: "The prepuce is an appendix to the genital organs, the object of which I could never divine; instead of being of use, it leads to a great deal of inconvenience, and the Jews have acted kindly in circumcising their children, as it renders them free from one at least of the ills to which flesh is heir. The prepuce is, in fact, a superfluous piece of skin and mucous membrane which serves no other purpose than as a reservoir for the collection of filth, especially when individuals are inattentive to cleanliness." This was very strongly confirmatory of Dr. Cadell's views, though it appeared to Dr. Watson a little extreme.—*Edin. Med. Journal*, Feb. 1873.

45. *Nocturnal Incontinence of Urine cured by Circumcision*.—Dr. JOSEPH BELL communicated to the Med. Chir. Soc. of Edinburgh, a case of nocturnal incontinence of urine which had persisted for seven years, in which he had performed circumcision a month previously, since which the incontinence had entirely ceased.—*Edin. Med. Journal*, May, 1873.

OPHTHALMOLOGY.

46. *Operations for Cataract*.—A very interesting and prolonged discussion on this subject took place recently in the Surgical Society (Paris), which is fully reported in Nos. 15, 17, 18, 20, 21, and 22 (April 11, to May 30, 1873) of the *Gazette Hebdomadaire de Méd. et de Chirurgie*. We regret that we have not now space at command to give a full analysis of this debate, and must, therefore, be content with merely briefly indicating the views of the prominent speakers.

MM. PANAS, GIRAUD-TEULON, and PERIN, gave fully the history of the different methods of extraction, pointing out the advantages and disadvantages of each, and while admitting the force of some of the objections to Graefe's they gave it the preference as affording the largest proportion of favourable results; though some were inclined to advocate certain modifications in the extent and position of the corneal incision.

M. LEFORT, on the contrary, greatly preferred the method of Daviel, but he considered it better to make the corneal incision with Graefe's knife than with that of Beer or Wenzel. M. DOLBEAU also regarded Daviel's operation as incomparably superior to Graefe's, and he denounced iridectomy.

M. GIRAUD-TEULON stated that he would not discuss the operation of discision, as he regarded it as only applicable to certain cases, nor that of couching, because its consequent dangers have been so fully demonstrated by long experience.

The sole advocate for couching was M. DESPRES (of Saint Quentin), who sent a communication to the society on the subject. He attributes the ill success of this method to the crystalline remaining as a foreign body, and to the rupture of the zonula Zinnii during the operation, and advocates a new method of performing couching which he practises. This he states consists in rupturing the capsule without injuring the zonula Zinnii, then reclining the lens in the aqueous humour behind the iris, where he asserts it does not act as a foreign body, and is, after a time, absorbed. How he accomplishes this feat does not seem to us very apparent. Besides it is well known that in discision, when a *large* fragment of the lens is left in the aqueous humour, especially if in contact with the iris, it is very apt to induce, like a foreign body, iritis, closure of the pupil, etc., and it is hard to believe that the presence of the whole lens would not lead to equally unfavourable results. In fact we can scarcely conceive of any method of operating for cataract more likely than this to lead to disastrous results, unless, perhaps, it be the pushing down the lens through the vitreous to the very bottom of the globe, thus breaking down the hyaloid membrane and leaving the lens as a foreign body to sooner or later excite inflammation and disorganization of the retina and internal tissues of the eye.

47. *Section of the Orbicularis Muscle and Integuments at the Outer Canthus, as a Prelude to Extraction of Cataract.*—Mr. E. CHESHIRE, Senior Surgeon to the Birmingham and Midland Eye Hospital, states (*Brit. Med. Journal*, April 5, 1873), that he has derived much advantage from this proceeding, which he has now resorted to in five cases.

"The advantages," he says, "attending division of the orbicular muscle at the outer canthus, before making the corneal section, are, more extensive exposure of the globe, which enables the operator to manipulate his instruments, and to make his section through the cornea with greater ease. And the spasmodic contraction of the orbicular muscle being overcome, the operator is left to complete his operation at his leisure; while all risk of sudden protrusion of the lens, followed as it sometimes is by prolapse of the iris and escape of the vitreous, is almost entirely avoided; and the contraction of the lids on the globe, which is sometimes a troublesome symptom in the after-treatment of cataract-extraction, is prevented.

"With division of the orbicular muscle, the wire speculum, which greatly facilitates each step of the operation, may be used without injury or annoyance to the patient. No sutures are required, as the divided surfaces readily unite, and scarcely leave a trace behind them. All that is necessary to be done is to keep the eyelids nicely in apposition for a few days after the operation by means of strips of court-plaster. All bandages and other coverings after extraction are to my mind objectionable, as it is important to have the fullest opportunity for examining the appearance of the lids without disturbing the patient by the removal of external appliances. Moreover, the support afforded by the lids to the corneal flap, when nicely kept in position by strips of court-plaster, is very agreeable to the patient. Spasm may be brought on, and the partially healed corneal flap may be opened by the removal of bandages, wool, etc., which may have become adherent to the lids.

"The operation is done as follows. A wire speculum is placed between the lids, to enable the operator to make his section through the muscle and integument at the external canthus with precision and ease. I have made no allusion to the mode of extracting, as the plan I propose is equally applicable to all extractions. Suffice it to say, that I always use Graefe's knife; and that Graefe's or Liebreich's operations are selected, as may appear most suitable to the particular case. I never use chloroform or ether in extraction, as the sickness which frequently follows their administration far outweighs any advantage that may otherwise result from the use of anæsthetics during the operation; and

with the orbicular section, the globe being more under control, they are still less required. Where great neatness is desired, the section may be made subcutaneously."

48. *Atropized Castor Oil as an application in some Corneal Affections.*—Mr. D. C. L. OWEN, Surgeon to the Eye Hospital, Birmingham, states (*Brit. Med. Journ.* May 10th, 1873) that in the treatment of irritable ulcer of the cornea, and of abrasions of the epithelium, it is generally desirable to use some application of a viscid nature, which may fill up the inequality of surface and reduce the irritation caused by the movements of the eyelid to a minimum. For this purpose no remedy is so fit as castor oil; and if to the oil be added the sulphate of atropia in the proportion of from one to four grains to the ounce (to which extent at least it is soluble), a convenient agent is obtained, which combines the beneficial effect of atropia with the mechanical advantages of oil.

In these especial instances, castor oil is to be preferred as a vehicle before either gelatine or glycerine, since it is not, like glycerine, painful when applied to the surface of the eye, nor, like both, readily washed away by the tears.

49. *Sympathetic Ophthalmia—Recovery.*—Mr. HENRY POWER relates (*Royal London Ophthal. Hosp. Rep.*, Feb. 1873) a very interesting case of this in a delicate youth æt. 17, and attributes the unusually fortunate result to the pupil being kept widely dilated from an early period, and to the free use of powerful tonics during the more active period of the disease. Whenever the atropia was intentionally or accidentally omitted, even for a day, so that the iris played over the capsule of the lens, an exacerbation of all the symptoms was sure to occur, a tag of adhesion was formed, pain was experienced, and the redness and watering of the eyes augmented. This was noticed over and over again. If the lymph of which such tags of adhesion be really composed of white corpuscles, we might imagine the course of events to be that, owing to paralysis (reflex) of the vasomotor nerves of the vessels of the iris of the sympathetically affected eye, these are congested and dilated, and in fact in the same state as those of the conjunctiva and sclera. So long as the pupil is widely dilated, they are rendered tortuous, and a certain amount of pressure is exerted upon them, but when the pupil contracts, these vessels become straight, and their delicate walls rub against the capsule of the lens, the friction causing or facilitating the escape of the white corpuscles, which constitute the adhesion, and thus the play of the iris is interfered with at one point. The nerves are here consequently dragged upon, pain with the reflex manifestations of intolerance of light, increased lachrymation and redness of all the vessels supplying the eye are induced, which again leads to fresh exudation, and thus the disease has a tendency to perpetuate itself.

The beneficial action of tonics, such as iron, strychnia, and quinia, is readily explicable on this view: the first constricting the walls of the smaller arteries, and thus diminishing the supply of blood to the part; the second strengthening and giving tone to the nervous system, while the third, as Binz and others have shown, materially influences the activity of movement and the escape of the white corpuscles of the blood.

50. *Operation for Strabismus.*—Dr. SNELLEN latterly has adopted the following method of operating for strabismus: The conjunctiva is freely divided in a direction parallel to and directly over the muscle: thus in convergent strabismus the incision would extend from the edge of the cornea towards the caruncle. Wounds in the conjunctiva parallel to the margin of the cornea are inclined to gape, especially when the eye is turned in the opposite direction; wounds vertical to the margin of the cornea are, on the contrary, inclined to close when the eye is rotated in the opposite direction. If necessary, a suture can be applied without any fear of diminishing the effect of the operation. The operator next holds with forceps first one lip and then the other of the wound, and separates with blunt-pointed scissors the conjunctiva to an equal extent above and below. The caruncle is then held and treated in the same way. The closed forceps are placed between the edges of the wound on the middle of the

muscle, opened, then gently pressed down and closed, thus inevitably seizing the muscle, into which a small aperture is now made close to the sclera. Two exactly equal incisions can now be made by inserting one blade of the scissors through the opening and the other between the muscle and the conjunctiva.

The advantages assigned are the following:—

1. The operation is easier. There is no risk of wounding the sclera (hence sharp-pointed scissors may be used so as to separate the attachment nearer to the globe). There is no danger of dividing Tenon's capsule too far in any direction.

2. The operation is less painful.

3. Extravasation of blood under the conjunctiva is prevented.

4. When desired, the capsule can be divided to a greater extent on one side so as to alter the action of the muscle.

A somewhat similar operation is proposed by Dr. Snellen for paralysis of the ocular muscles. "The conjunctival wound is in the direction of a meridian (from before backwards). The muscle is divided in the usual way, but a little further back than in tenotomy, so that a small piece of it remains attached to the sclera. Two sutures are now applied in the following way: through the upper edge of the wound in the conjunctiva, through the remnant of the tendon on the sclerotica, through the muscle drawn forwards, and again through the same edge of the wound in the conjunctiva. The second suture is inserted at the lower side exactly in the same way and parallel to the first. Both are now separately drawn tight and knotted. So made, they cannot possibly become loose too early. As the knots are on the outer side of the conjunctiva, the threads can be easily removed at any later period. The risk of inflammation may be lessened by separately uniting the conjunctival wound. It is not always necessary to divide the antagonist."—*Royal London Ophthal. Hosp. Rep.*, Feb. 1873.

51. *Dermic Grafting in Ophthalmic Surgery.*—Dr. WECKER describes a plan of grafting which he terms dermic and which he performs as follows: He pinches up a small fold of the skin of the arm, or of the forearm, between his thumb and index finger, and transfixes the base of it with a small bistoury. The piece of skin is seized with forceps and cut off at the base with a pair of curved scissors. He thus obtains small grafts which, when retracted, measure from 6 to 8 mm. (.24"—.32") in different directions. These grafts are then applied to the wound and spread out carefully by means of a blunt probe. It is intended that the wound should be covered as completely as possible with a serrated mosaic of these pieces. The wounds of the lids or in their neighbourhood measure commonly only about 3—4 cent. (1.2"—1.6"), and require about 10 or 20 pieces to cover them. A piece of gummed goldbeater's skin is then placed over the wound, and this allows of a constant inspection of the condition of the grafts. A bandage is applied over the eyes to insure absolute immobility. The dressing is not changed for twenty-four hours. The change which occurs in the colour of the grafts indicates in a few days whether the result will be successful or not. Those pieces which adhere have a rosy colour at the end of 36 or 48 hours, gradually becoming red; whilst those which have not taken keep their palish-yellow tint, become encircled with a brownish-black ring, and finally mummify. It is remarkable that even beneath the mummified grafts when they become detached, it is found that cicatrization has been completely established. In reality it is then discovered that only the epidermis has shrivelled up, and that the derma has become grafted. If any fail, however, it is an easy matter to fill up the gaps left in the mosaic. By this means suppuration is prevented, which is injurious to the other grafts. He does not hesitate to assert that covering a wound in a state of granulation "at the edges of which cicatrization is commencing, or, at least, is about to commence" (Reverdin), with this kind of mosaic will at once check suppuration. The indications for the employment of grafting appear, at present, to be the following. 1. Grafting ought always to be employed in cases of burn of the eyelids or neighbouring parts which give rise to suppurating wounds, and by faulty cicatrization of which deformity or displacement of the eyelids would be caused. 2. It can

be very advantageously employed, in cases of partial or complete ectropion of the eyelids in consequence of cicatricial contraction in their neighbourhood (burns, caries, fractures, etc.). 3. Dermic grafting may, with advantage, take the place of almost all, if not all, blepharoplastic operations. 4. Grafting ought to be employed in all cases in which the eyelids have undergone a considerable loss of substance in consequence of an accident or an after operation, and a suppurating wound remains.—*Royal London Ophth. Hosp. Rep.*, Feb. 1873, from *Annales d'Oculistique*, July–August, 1872.

52. *Visible Pulsation of the Retinal Vessels*.—OTTO BECKER has examined the eyes of patients suffering from heart disease with the ophthalmoscope, and found that in cases of insufficiency of the aortic valves, spontaneous pulsation of the arteries on the disc and of the retina was almost always present. After making these observations, he had his attention called to a communication from H. Quinke on the same subject in the *Berliner Klin. Woch.*, 1868, No. 34, and 1870, No. 21. These communications seem to have escaped the notice of ophthalmologists. He speaks of arterial, venous, and capillary pulsation in insufficiency of the aortic valves, the capillary pulsation being characterized by alternating pallor and redness of the disk when seen in the erect image. He only met with pulsation in marked cases of aortic disease, and did not always meet with it at each observation of the same case. Becker finds it in all cases and at all times. Sometimes, however, it is necessary to excite the circulation by letting the patient walk about or by giving a stimulant. At first he was unable to assure himself of the capillary pulsation, but latterly he had been able to do so. The filling of the trunks of the arteries and the emptying of the veins on the disk are synchronous with the cardiac systole. The arterial pulsation could also be seen in branches at a distance from the disk equal to three or four of its own diameters. He recommends that the observer's attention be directed to the light streak seen on the arteries. He will find that this increases in breadth, and, also, at the same time, the darker streaks on either side of it increase in breadth. The artery also increases in length, as may be seen by watching a curve. The pulsation can be seen best, and sometimes only, just before a large trunk gives off branches at a considerable angle. All these points are described in detail.

Notes of seventeen cases are given: the conclusion derived from them is that simple aortic insufficiency with or without hypertrophy of the left ventricle produces spontaneous pulsation of the arteries of the disk and of the retina. There was one exception. The patient was very anæmic, the radial pulse was small and soft. The anæmic condition probably accounted for the absence of retinal pulsation. In one case in which aortic insufficiency was diagnosed and no pulse was noticeable, the autopsy showed that no aortic insufficiency was present. In one case pulsation was noticed in the left eye, but was only discovered after close examination in the right. The diagnosis was of aneurism of the left carotid, chiefly, and of the innominate and arch of the aorta in a less degree. The feeble pulsation detected in the right eye was probably due to slight aortic insufficiency produced by the neighbouring aneurism.—*Royal London Ophth. Hosp. Rep.*, Feb. 1873, from *Graefe's Archiv*, 18 Bd.

MIDWIFERY AND GYNÆCOLOGY.

53. *Injection of Perchloride of Iron in Post-partum Hemorrhage*.—A most interesting debate on the treatment of post-partum hemorrhage recently took place at the London Obstetrical Society, in which the merits and demerits of this treatment were fully discussed. Dr. W. S. PLAYFAIR states (*The Obstetrical Journal*, May, 1873) that a few days after this debate he had a case in which he employed it, and firmly believes he saved by it the life of his patient; "yet very grave and even alarming symptoms followed, due, it

can hardly be doubted, to its employment." Referring to the journal just named for the minute details of the case, we may state that "when the iron was injected, although the hand was in the uterus, and the clots within it had been as much as possible removed, blood was still pouring out abundantly. The powerful astringent at once corrugated all the blood and coagula it came in contact with, and these hardened clots filled up the uterus and the canal of the vagina. In due course these began to decompose, and septic absorption took place. By the finger and the intra-uterine injection they were gradually broken down and removed. The improvement unquestionably dated from the expulsion of the two large and decomposing coagula on the sixth and seventh days after delivery. Immediately after this happened, the temperature and pulse fell remarkably, and recovery commenced and continued uninterruptedly.

"What then is the lesson to be learnt from this case? Is it that the risk is too great, and that the injection of the perchloride of iron should be banished from practice? I think most unquestionably not. I have little doubt, knowing what I did of the patient's former labour, and having already tried in vain all the anti-hemorrhagic treatment at our command, that without the perchloride the flooding would have proved fatal. It is indeed precisely in these inveterate cases, where every means of inducing uterine contraction proves unavailing, that it forms so invaluable a resource. Rather, I think, it should teach us to limit its use to these only—as, I believe, Dr. Barnes has all along taught. It shows also that the retention in utero of hardened coagula, liable to decomposition, may prove a source of danger hitherto unsuspected. With a knowledge of this fact it would be our duty to secure the expulsion of the coagula as soon as possible after all risk of hemorrhage had ceased, and make sure that there was a free exit for the discharge.

"This would best be done by satisfying ourselves on the second or third day after delivery that the vagina is not filled with clots, and removing them if present, and by using antiseptic intra-uterine injections freely, as in the above case, should suspicious symptoms arise. With a knowledge of this source of danger, it might probably be avoided in most cases."

54. *Urgent and Prolonged Dyspnoea coming on suddenly after Labor.*—Dr. J. J. PHILLIPS, Ass. Obstet. Phys. to Guy's Hospital, relates (*Brit. Med. Journ.*, May 3, 1873) the following interesting case of this in a married lady, æt. 36, to whom he was called Dec. 30th. She had been delivered of her fifth child at 2 P.M., after a perfectly natural labour, and continued to do well until 6 P.M., when she complained of oppression and began to gasp for breath. Dr. P. saw her at 9 P.M., when her condition was most alarming. She was sitting up in bed, supported by pillows; the dyspnoea was most urgent; respirations 48, pulse at wrist 140; "respiratory murmur could be heard over the chest in front and behind; there was no abnormal sound accompanying the heart's action, but the first sound was muffled; the legs and the forearms were quite cold; the lips were livid; the face was pallid. She endeavoured on one or two occasions to speak, but could only articulate one word at a time. The history of the case and the symptoms seemed to point unmistakably to a coagulum in the pulmonary artery; and it seemed to us that the treatment should be directed to support the heart's action as much as possible, and this was done by repeated doses of brandy, which with some difficulty were swallowed in soda-water. Five-grain doses, increased to ten grains, of carbonate of ammonia were given at short intervals, and warmth was applied to the extremities. I remained about an hour. The case seemed hopeless. At nine o'clock next morning, however, I found her much relieved. She was able to assume more nearly the horizontal posture; the extremities were warm; the breathing was much more easy, and only thirty per minute; the pulse still very small, 120 per minute; temperature in the axilla, 97° Fahr. Symptoms of improvement had commenced about four in the morning. Her husband and another medical man who sat up during the night, believing that the carbonate of ammonia was doing good, had continued its use in increased doses, so that in twelve hours she had taken two hundred and ten grains of it. The stomach tolerated this large quantity in a remarkable manner. 'She was a little sick two or three times.' The brandy

had also been continued, and she had taken a little beef-tea in the early morning. In the evening, she was in much the same condition as in the morning; frequency of pulse and respiration the same; temperature only half a degree higher (97.5° Fahr.). She still complained of pain in her chest. During the night some hours of sleep were obtained, and the next day she was more comfortable in every respect. The respirations had fallen to from twenty to twenty-five per minute; temperature, 99° Fahr.; no abnormal cardiac sound. The strictest rest was maintained. On the sixth day there were some pyrexial symptoms; and on the seventh she began to suffer from severe sickness." She however soon improved.

Dr. P. thinks that it is impossible to explain the symptoms in this case upon any other hypothesis than that of pulmonary embolism. He thinks it "probable that a loose clot which had formed in the right side of the heart was driven into the pulmonary artery, giving rise to the urgent dyspnœa which supervened so suddenly. The patient told me that throughout the day she had felt a little shortness of breath. Given that a clot found its way into the pulmonary artery, it is of course quite conjectural what changes took place in it; but it is not improbable that a loose clot might undergo such contractions as to allow the gradual re-establishment of the circulation, coincident with the slow improvement in the general symptoms. Different opinions will doubtless be entertained as to the share which the carbonate of ammonia had in relieving the symptoms, by reducing the hyperinosis of the blood which existed at the time. The large quantity of this alkali which was taken in twelve hours is specially deserving of notice. I am not aware that it has been given continuously for twelve hours in such large doses at such short intervals. Dr. Richardson, in one of his valuable contributions to the subject of thrombosis, gives reasons for administering the liquid ammonia rather than the carbonate; but when this case occurred I had not read Dr. Richardson's remarks on this point. Another fact of interest in the case now reported, is the low temperature which continued throughout the day succeeding the most severe symptoms.

55. *Convulsive Diseases of Women.*—Dr. ROBERT BARNES, in his admirable Lumleian Lectures recently delivered, sums up in the following propositions the principal points relating to the convulsive diseases of women:—

1. Pregnancy and labour require for their due fulfilment an extraordinary supply of nerve-force.

2. This extraordinary supply of nerve-force implies a corresponding organic development of the spinal cord.

3. The provision of an extraordinary supply of nerve-force implies a greatly augmented irritability of the nervous centres, rendering them more susceptible to emotional and peripheral impressions.

4. The disturbances in nutrition occasioned by pregnancy almost always entail some alteration of the blood, which increases the irritability of the nervous centres, and favours the evocation of any latent convulsive or other nervous diathesis, as chorea, epilepsy, or vomiting.

5. When the blood-change wrought by pregnancy is marked by albuminuria, a poisonous action of peculiar intensity is exerted upon the nervous centres tending to produce eclampsia.

6. Obstinate vomiting in pregnancy probably sometimes proves fatal by the development of an unknown organic systemic morbid process.

7. Menstruation resembles pregnancy in giving rise to an exalted central nervous erethism, and ovulation is a primary exciting cause of epileptic, vomitive, and hysterical convulsions.

8. At the climacteric age, again, there is renewed susceptibility to convulsive disease.

9. Pregnancy, by evoking or producing convulsive diseases, under certain known and passing conditions, puts to the test the various theories of the pathology of these diseases.

10. The rational treatment of convulsive diseases in women must take into account the two great factors in the production of these diseases—namely

exalted nervous irritability under the stimulus of the reproductive function, and lowered or empoisoned conditions of the blood.—*Lancet*, May 3, 1873.

56. *Excessive Vomiting of Pregnancy*.—Dr. MCCLINTOCK read a communication on this subject before the Obstetrical Society of Dublin, March 12th, 1873. He included under the above designation, all cases where this symptom of the gravid state is so severe and persistent as to threaten the life of the patient. He advocated a resort to the induction of abortion in all these cases, if medical treatment had been found unavailing, and the life of the patient was endangered. A highly illustrative case was related, where the author recently had recourse to induction, apparently under hopeless circumstances, and saved the patient from inevitable destruction. He took a brief clinical retrospect of the subject, and a table was given of thirty-six cases where abortion had been artificially provoked to rescue the patients from the fatal effects of their excessive vomiting. In twenty-seven of these cases the vomiting was arrested, and the patients perfectly recovered; whilst in *nine* instances, although the vomiting was stopped, still, ultimate recovery did not take place, partly in consequence of the operation having been too long delayed, and partly from the effect of some intercurrent complication (*e. g.*, diarrhœa, hemorrhage, puerperal fever, biliary calculus, etc.), not fairly attributable to the operation itself. The author cited fifty cases (from various authentic sources) where death had actually taken place in consequence of the persistence and uncontrollable severity of the sickness. With reference to the etiology of this vomiting, he briefly alluded to each of the theories that had been put forward by different authors to account for its production, and showed their inapplicability to the great majority of cases; and he completely refuted the notion (so strongly advocated by Dr. Grailly Hewitt), that some displacement of the gravid uterus was the cause of the vomiting in every instance. He was at pains to distinguish between the vomiting that occurred *in* pregnancy (from some concurrent disease), and the true vomiting *of* pregnancy. Whilst enforcing extreme caution in the former class of cases, before any recourse be had to artificial abortion, he still thought that this alternative measure might be justifiable in some cases of this description, and referred to instances in his table in support of the opinion. He concluded his essay with a detailed clinical history of a case in which he had recently induced abortion. It was the lady's first pregnancy, and the sickness began about five or six weeks after impregnation. She was reduced to the very last degree of prostration and weakness when abortion was provoked, inasmuch that the preservation of her life seemed scarcely possible; nevertheless she made a good recovery, and has again become pregnant.

Dr. LOMBE ATTRILL considered the vomiting of pregnancy to be generally a useful, not an abnormal symptom; and thought that, in some cases at least, it was due to distension of the os internum, instancing the occasional production of nausea on the passage of an uterine sound, and by the passage through the os internum of clots in dysmenorrhœa, as examples of vomiting occasioned by such a cause. In cases of excessive vomiting, abortion, he believed, ought to be adopted, when the patient is sinking.

Dr. CHURCHILL, also, did not believe in the flexion theory as the cause of the vomiting in pregnancy. A retroverted pregnant uterus was not of common occurrence. He thought that various conditions (granular inflammation, etc.) of the cervix uteri, cervical canal, or os internum, might be a cause of the sickness; and he remarked that he had seen typical cases of morning sickness in women who were not pregnant. He, Dr. Churchill, had seen seven cases of extreme vomiting, five of which were fatal. The early suffering in these cases was generally that of exhaustion; but, sometimes, there was inexplicable agony. The great difficulty in these dangerous cases, is to arrive satisfactorily at a determination of the time at which the operation should be performed. The best guide was the condition of the pulse. In all the bad cases he had seen, the pulse became very high; and when the pulse rises, the question of operation should be at once taken into consideration and not postponed too long, because, if the patient be allowed to run down, she will not rally.

Dr. J. A. BYRNE had only seen one fatal case from excessive vomiting in

pregnancy. The patient was a delicate woman, four and a half months pregnant. He did not think the symptom depended upon alterations in position of the uterus, as he had seen instances of pregnancy in cases of retroflexion of the uterus without any vomiting; and in these cases of excessive vomiting during pregnancy, the uterus was generally found in its normal position. He, Dr. Byrne, thought that the symptom in question was due to the stretching of the fibres of the uterus, and that the Chairman's explanation would not apply. Change of air was of benefit in the treatment of these cases, as was also the oxalate of cerium, and the hypodermic injection of morphia; but we should be extremely circumspect about recommending the operation of the induction of abortion. 1st. Because it was a line of practice which might be adopted too generally; and 2d. Because of the speedy manner in which these cases, sometimes, suddenly recovered.—*Irish Hospital Gaz.*, May 1, 1873.

57. *Dysmenorrhœa cured by Abroma agustum (Olutkombol)*.—B. B. MOHUN SIRCAR, L.M.S., relates (*Indian Med. Gaz.*, April 1, 1873) three cases of dysmenorrhœa successfully treated by the *Abroma agustum*. The roots, he says, are the officinal part of the plant; they are covered with thick, fleshy, easily separable bark, rich with a viscid white fluid which contains the active principles of the plant. Mr. S. politely offers to supply a packet of the drug for trial to any of his professional brethren.

The first case was a lady, æt. 23, who had suffered from dysmenorrhœa for the last eight years. Each catamenia was accompanied with severe pain, continuing for three or four days. The discharge was scanty and dark-coloured. She had a child when 15 years of age. She took the first dose of olutkombol early in September last, and continued it for seven days successively, from the first day of the appearance of the menses. The pain became much less than on previous occasions. On the menses appearing the next month, though not attended with pain, she took the medicine as before; she subsequently became pregnant.

—, aged 16, suffered from painful menstruation from the beginning of her puberty. Born of wealthy parents, she had the advantage of various sorts of treatment, but none proved efficacious. In the month of August, 1868, fresh roots of the olutkombol, in half drachm doses, were administered for seven days during the period of the menses. No catamenia appeared; the next month she became *enceinte*, and in due time gave birth to a healthy child. Since then her menses are quite normal.

—, aged 26, mother of two children. In her 20th year, her menses became irregular and painful. She suffered in this way for nearly four years. In 1868 she took olutkombol, got rid of her pains, and conceived; but she aborted on the sixth month. The menses were again painful, and olutkombol was re-administered in 1870. She again conceived, and is now the mother of a boy nearly two years old.

58. *Extra-Uterine Fœtation*.—Several very interesting communications on this subject were made to the Obstetrical Society of London at its meeting on the 7th of May last.

Mr. WM. ROSS JORDAN related a case of this in which gastrotomy was successfully performed. The subject of it was a patient in the Birmingham Hospital for Women, æt. 29. In April last she had inflammation of the bowels, which threatened her life. In July or August she first felt the child, and in September she expected and prepared for her confinement. From this time she gradually became smaller in size for six weeks, when she fancied she was in labour, being in great pain for three or four days. After that she had frequent shivers and a cold sensation in the abdomen. On December 13, a swelling in the abdomen, not larger than in ordinary pregnancy at six months, was discovered fluctuating a little towards the left side, and on deeper examination a round mass like the placenta between the umbilicus and pubes, and a harder projection to the upper and left border of the tumour. The cervix uteri was pushed up to the right side. The sound, penetrating three inches and a half, pointed to the right groin, and moved the round body felt in the

abdominal examination. The recto-vaginal pouch was occupied by a hard, rounded mass. On December 21, a puncture with the aspirator was decided upon, and a quantity of chocolate-coloured fluid mixed with white flakes was drawn off. Mr. Ross Jordan, from his examination on this occasion, came to the conclusion that the case was one of extra-uterine foetation. Two hours after complete collapse came on, and hemorrhage into the cyst or abdomen was suspected. Five hours after the use of the aspirator an incision four inches long was made in the abdominal wall down to the peritoneum, when the cyst with the placenta under it presented. A clot of blood having been removed, the cyst, with a foot near the external opening, was drawn forward, but the wall of the cyst being thin it ruptured, and through this opening the foetus was extracted. The placenta was left undisturbed, and the openings of the cyst and the abdominal wall were brought together by sutures of carbolized catgut, leaving an open wound about two inches and a half long, which was covered with a layer of tenax, etc. The patient progressed favourably, and on January 1 and 2, large fragments of placenta were discharged, and on April 10, she came to the Hospital looking well, with the wound quite closed.

Mr. JOHN SCOTT related another case in which the result was not so fortunate. The patient, æt. 32, was admitted into the Hospital for Women complaining of pain in the right inguinal region. The uterus was found developed as in early pregnancy. This was April 17. On May 15, a tumour could be distinctly felt above the pubes. June 5: The os could scarcely be reached, and the tumour felt more elastic. August 7: A feeling was communicated to the finger as if of fluid between it and the uterus; the foetal heart could be heard. January 6: The tumour extended two inches above the umbilicus, and felt per vaginam like the tense bag of membranes. No foetal heart could be heard, and a hard body like the uterus was felt in front of the abdominal tumour. January 15: The sound passed four inches, its point being felt in the body just mentioned. On the 29th sudden and violent pains in the epigastrium came on, with restlessness, faintness, and sickness. The cyst was punctured by the aspirator, but no fluid could be withdrawn. On the 30th, in consequence of threatening symptoms, it was decided to make a free incision through the abdominal walls, when what appeared to be the enlarged uterus presented itself, but on extending the incision upwards it proved to be an expansion of the uterine tissues. This was cut through, and on passing the hand into the cyst the foetus was found lying with its head in the upper part. It was removed, the cavity sponged out, and the placenta left untouched. The upper part of the incision was closed by sutures, and the lower left open, the whole being dressed with carbolized oil. The patient died thirty-one hours after the operation. The author gave a minute report of the cyst and its appendages made by Dr. Snow Beck.

Dr. ALFRED MEADOWS related a case of *supposed* extra-uterine foetation, in which gastrotomy was performed mainly with the view of showing the difficulty of diagnosing abdominal tumours. The patient, æt. 58, was admitted to the Hospital for Women, and had passed through the climacteric period nine years ago. She had great pain in the abdomen, which was enlarged by the presence of a tumour. Sixteen years since she fancied herself pregnant, and in due time had pains like those she had felt in her first confinement; these, however, gradually declined, and no child was born, and since that time she had considered herself to be carrying a dead child. On admission, the abdomen was found to be occupied by a large tumour about the size of the uterus at term, tender to the touch, and apparently solid. The uterus was high up, and its cervix very small. The sound passed upwards and forwards two and a half inches. The balance of opinion among the author's colleagues being that this was a case of extra-uterine gestation, it was determined to clear up all doubts upon the matter by making an exploratory incision five inches in length between the pubis and umbilicus. A white friable mass was then discovered, having all the characters of malignant disease. It broke down readily, and two ounces of a thick brownish fluid escaped. Finding it impossible to remove the mass, the abdominal wound was closed. Fifty-three hours after the operation the patient died, and upon opening the abdomen the mass of malignant disease was found

to be the omentum, which overlapped the tumour, and was about an inch in thickness. The tumour itself, which was adherent in every direction, proved to be a large fibro-cystic tumour of the uterus. Even with the aid of an exploratory incision, a correct diagnosis of the character of the tumour had not been arrived at previous to death.

MR. LAWSON TAIT thought that the importance had been overlooked in this case of the absence of retro-uterine fulness, or rather the absence of a solid tumour there. It would be almost impossible, he said, to imagine a case of extra-uterine foetation without a retro-uterine tumour, giving to the finger a feeling of cystic *ballotement* previous to the absorption of the amniotic fluid, but after that feeling solid. In his own case, where the history had led him astray, he had not made it sufficiently clear that menstruation had ceased for eight months and then was resumed.

MR. SPENCER WELLS said he had only seen one case of extra-uterine foetation. It was remarkable as being a twin pregnancy—an intra-uterine and an extra-uterine foetus going on together up to the full time of pregnancy, and the intra-uterine foetus being delivered in the usual manner. He had seen several supposed cases of extra-uterine pregnancy, but in nearly all the source of fallacy was extreme thinness of the uterus and of the abdominal walls. He had not found irregularity or suppression of menstruation at all uncommon during the progress of ovarian disease; nor was it rare for disease of both ovaries to go on while menstruation continued with perfect regularity. In two cases after removal of both ovaries, menstruation (or a periodical sanguineous discharge from the uterus) had returned at several successive months.

MR. LAWSON TAIT in a note on the *diagnosis of extra-uterine pregnancy*, said that in these cases very little confidence should be placed in the statements of patients if they were not in harmony with physical signs. He had, in consequence of the history of her case given by a patient, been led to make an erroneous diagnosis, mistaking a multilocular ovarian tumour for a case of extra-uterine foetation. There were two circumstances which invariably accompanied extra-uterine gestation which has gone past the period: The first was due to the general excitement and congestion of the organs involved, especially to the enlargement of the uterus; and the second to the absorption of the liquor amnii after the death of the child. The conditions with which extra-uterine pregnancy may be confused before the death of the child were displacement of the normally pregnant uterus during the early months, pregnancy complicated with fibro-myoma or cystic disease of the uterus, and more rarely pregnancy of one half of a double uterus. After the death of the child diagnosis was more difficult. The two points in the history already mentioned were most important; auscultatory signs were of no use. The other conditions with which it might be confused were pelvic hæmatocele, ovarian tumours, especially dermoid cysts, cancer, fibro-cystic disease of the uterus, hydatids of the uterus, and phantom pregnancy. The uterus in extra-uterine pregnancy was always intimately associated with a tumour, and generally in front of it, movable to a limited extent, and enlarged. The most important point was that the cervix is always patulous. Under such circumstances, if a foetal heart were audible, the case was clear. If the case were seen after the death of the child the tumour would be soft, and, besides obscure *ballotement*, possibly a part of the child might be made out by internal or external examination. Of the three cases which the author had seen, two had been first pregnancies, and in neither had there been any troublesome pain. In the third there was great pain, but the patient was seen during the false labour.

59. *Syphilitic Disease of the Placenta*.—DR. ERNEST FRÄNKEL, in an elaborate article illustrated by several plates, gives the history of over twenty cases of syphilitic placenta. After referring to different authorities upon the subject, he summarizes his observations in the following conclusions: 1. the placenta may become affected by syphilis, and there are certain characteristic indications of this. 2. The syphilitic placenta occurs only in hereditary or congenital syphilis in the foetus. 3. The seat of the disease varies according as the mother remains healthy, and the syphilitic virus is communicated directly

from the father to the ovum by means of the semen; or according as the mother is diseased. In the former case the affected fœtal villi of the placenta degenerate through proliferation of cellular granulations, with consecutive obliteration and atrophy of the vessels, complicated frequently by marked proliferation and thickening of the epithelial covering of the villi. 4. In the latter case, when the mother is syphilitic, the three following conditions may occur: *a.* The mother, through the act of impregnation, is simultaneously affected with syphilis with the fœtus; diffused syphilis of the placental villi may then develop itself, though primary infection of the maternal parts—endometritis placentaris—is not excluded. *b.* The mother becomes infected before, or shortly after, conception. The placenta may remain normal or become diseased under the form of endometritis placentaris gummosa, or, according to Virchow, in a more limited sense—endometritis decidualis. *c.* The mother becomes infected only during the latter months of pregnancy (seventh to tenth month). It then generally happens that, in case the father was healthy at the time of impregnation, the fœtus, as well as the placenta, is exempt from the above-described alterations. 5. The infection of the fœtus on passing through the maternal passages is rare, and not yet proved conclusively.—*Med. Times and Gaz.*, May 10, 1873, from *Archiv für Gynækol.*, Bd. v., April, 1873.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

60. *Antagonism between Opium and Belladonna.*—Dr. JOHNSON, during his residence in China, has had great experience of opium-poisoning and the ill effects of opium-eating. During the last seven years he has treated upwards of three hundred cases of opium-poisoning. He first employed atropia in 1869. He employs it hypodermically in the severer cases, where the patient is profoundly comatose. In milder cases, emetics, the stomach pump, cold douche, and constant exercise are generally sufficient. It is in the worst cases that atropia displays its wonderful effects; for instance, where the pupils are firmly contracted to a pin's point and immovable, the conjunctiva and the cornea insensible to touch; the face pale; the lips, eyelids, and nails livid; the pulse weak and irregular; the breathing slow and stertorous; the extremities cold. In such cases, he usually injects hypodermically half a grain of atropia. Within ten or twenty minutes the pupils begin slowly to dilate; and, after an hour or more, the face becomes flushed; the breathing soft, without stertor; and the pulse stronger. Within two hours the full effects of the drug (atropia) are manifest, "viz., widely dilated pupils, flushed face, hot skin, tranquil, slow breathing, diminished frequency and increased strength of pulse, followed by calm and tranquil sleep, from which the patient is easily awakened after three or four hours." If within two hours the first dose fail to dilate the pupils, flush the face, and render the breathing slow, steady, and tranquil, he repeats the injection. In cases where the coma is not profound, he first employs a quarter of a grain of atropia, repeating the dose if the first be insufficient. He says, "I have observed very sudden and very unfavourable changes set in rapidly, even in the mildest cases of opium-poisoning. This has happened so frequently, that I have come to the conclusion that whenever there is contraction of the pupil and great drowsiness, after the evacuation of the contents of the stomach, it is always advisable to administer a small dose of atropia. I may remark, that in no instance have I seen any bad effects following the subcutaneous injection of atropia."—*London Med. Record*, April 9, 1873, from *Hospital Reports*, Shanghai, March, 1872.

61. *Carbolic Acid a Cerebro-Spinal Poison.*—Dr. D. J. HAMILTON states (*Brit. Med. Journ.* March 1, 1873), that since carbolic acid has been so extensively used, instances of poisoning by it have become more common, and several examples of it have come under his observation. He relates the following case:—

S. R., female, æt. 4½, had an operation performed on the arm, requiring an incision through the skin about four inches long. The wound was covered with lint soaked in pure carbolic acid—actual contact, however, being prevented. In an hour after the operation I was called to see the patient, as the nurse thought that she was suffering from the effects of the chloroform. I found, on examination, that the conjunctivæ were almost quite insensible; the skin was cold and clammy, and the face of a slightly livid colour. The pulse was slow and depressed. Thinking that very probably the chloroform might have something to do with the production of these symptoms, I resorted to the ordinary restorative measures; but, notwithstanding this, the patient was evidently becoming more comatose. The dressings were now removed, and it was found that a large quantity of carbolic acid had melted and run down into the wound. The wound was now washed with water and rectified spirit, and artificial respiration was commenced and steadily kept up. The natural respiration at this time occurred at intervals of about half a minute. Injections of brandy were administered, and hot fomentations were wrapped round the patient. In three hours after this, the respirations ceased entirely when artificial aid was not employed. The pulse at the wrist had disappeared, and the face became more livid. At the same time, the coma was complete. Half an hour afterwards, the child died.

Dr. T. BOND confirms (*Med. Times and Gazette*, March 8, 1873) this statement, as to the poisonous effects of carbolic acid, and says that three fatal cases have occurred within a month; one at St. George's Hospital, another at the Birmingham General Hospital, and another at one of the largest London hospitals.

62. *Quicksilver given to Procure Abortion, followed by Mercurial Tremors.*—Sir G. DUNCAN GIBB reports (*Lancet*, March 8, 1873) the case of a young woman, upon whom, when about three months pregnant, an attempt had been made by her seducer to produce abortion by the administration of two teaspoonfuls and a half of quicksilver. No effect was produced upon the uterus, but in the course of a few days she commenced to shake on the right side of the body, her gait became unsteady, and she stumbled frequently in walking. When seen by Sir Duncan Gibb, she was six months pregnant. The above symptoms were still present, and she could not grasp firmly with the right hand. In a fortnight the shaking had extended to the other side of the body, and the left hand grasped feebly like the right. In the course of the next two months all the symptoms gradually became less, and were scarcely noticeable when she was confined.

There was not any salivation throughout, nor was there any blue mark on the gums as in lead-poisoning; they appeared natural. She must have swallowed four ounces and a half of quicksilver.

The above case was remarkable in that the muscles of one side of the body only were first affected by the tremors, instead of the upper extremities, and then they extended to the opposite side of the body.

63. *On Marsh's Test for Arsenic.*—H. HAGER (*Pharm. Centralhalle*, xii. 157) proposes to employ a Marsh's apparatus charged with solution of potash, instead of dilute acid, as a means of detecting arsenic in tartar-emetic. In such an alkaline solution there is no formation of antimoniuiretted hydrogen, but reduction of metallic antimony. Until all the antimony has been reduced to the metallic state, there is no production of arseniuiretted hydrogen; but when this reduction is complete, then there begins to be formed arseniuiretted hydrogen, the presence of which may be readily ascertained.

Dr. DRAPER also proposes a slight modification of Marsh's test in order to admit of the convenient weighing of the deposited arsenic (*American Chemist*, June, 1872). A bundle of fine platinum-wire is introduced into the exit-tube, and afterwards heated, whilst the arseniuiretted hydrogen is passing through it, when the arsenic is absorbed by the platinum, and may be weighed along with it.—*London Med. Record*, April 2, 1873.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Bilateral Dislocation of the Fourth Cervical Vertebra forwards; Death in twenty-five and a half hours; Post-mortem Examination; Account read and Specimen exhibited at the Scott County (Iowa) Medical Society, in Davenport, December 5, 1872. By R. J. FARQUHARSON, M.D.

At 9 A.M., Nov. 19th, a heavy, muscular man fell backwards down a flight of ten steps, striking his head against a box, which was standing a few feet from the foot of the stairs; when found he was doubled up against the side of the box, with his feet resting on the lower step.

At 7 P.M., when seen by Dr. Middleton, it was difficult to make out his symptoms, owing to his partial intoxication; however, it was ascertained that he had not passed urine since the accident; he was conscious and rational, spoke of his friends, of how much money he had, etc. He was sitting up in a chair, supported by two or three women; he complained of great tenderness from pressure in one spot at the back of the neck, but no irregularity in the ridge of spinous processes could be felt. He also complained of a sense of impending suffocation when his head was raised up, though it was done at his urgent request; this movement, if carried too far, caused him to cry out from excessive pain; he said he had no feeling in his hands, arms, legs, or feet.

November 24th, 10 A.M., was first seen by the reporter, when his condition was as follows:—

Decubitus dorsal, with head on a small pillow, and face turned slightly to one side; pillow wet with fluids, vomited or spit out; perfectly conscious, and answered questions in an audible voice, somewhat influenced by his rapid breathing; face pale and covered with large drops of warm perspiration; skin of body and extremities also warm and moist; respiration 44, and sighing, being entirely diaphragmatic; chest fixed; pulse 144, full and soft, with no perceptible weakness; no priapism; drew off about thirty fluidounces of high-coloured urine, a few drops of blood with the first part, the remainder clear. Just as the urine ceased to flow, his face changed and his breathing stopped suddenly, the pulse continuing for some seconds and then ceased; a few spasms of the grinding muscles of the lower jaw took place as it dropped. Soon after death the face, which had been pale, became suffused and lived.

Sectio cadaveris, twenty-nine hours after death.—Rigidity marked; fine muscular development, weight about 170 pounds; bright fluid blood coming freely from the nostrils; spinal column in the cervical region only examined; examination made with great difficulty, owing to the fact of the body being in a coffin and in a small dark outhouse. Upon cutting through the skin and fascia, at the back of the neck, and coming down into the muscles, there was found at the left side a collection of dark fluid blood, and upon examination with the finger, an opening in the yellow ligament was found, through which the finger *easily* passed, and the edges of the laminae (in which no fracture was detected) could be felt, and also the spinal cord with

the dura mater unbroken. The space between the laminae of the fourth and fifth vertebræ readily admitted the finger, and must have been at least an inch in width.

Upon removing the cervical vertebræ (except the atlas), the dislocation was found to have been reduced by the force of the removal, but the unnatural mobility, at the junction of the fourth and fifth vertebræ, the rupture of the ligamenta sub-flava on each side, together with the rupture of the ligaments of the oblique articulations, all plainly showed the site of the lesion. Just at the lower part of the front of the body of the fourth vertebra, the anterior common ligament was detached and raised into a fold, which extended across the body.

Congenital Fracture of Clavicle. By A. B. De Luna, M.D., of New York.

Mrs. B.—, æt. 32, in good health, and in the ninth month of pregnancy, fell down stairs bruising one of her legs, and striking the abdomen against a wooden tub she was carrying at the time. On reaching her room immediately after the fall, she complained of pain on one side of the abdomen, though not very severe; faintness, and strong movements of the child in utero. These sensations, however, gradually disappeared on assuming the recumbent position for a few hours, and she reached her full term, which was two weeks after this, without further trouble, being then delivered, after a short natural labour, of a male infant apparently healthy, according to the mother's testimony.

A few days after her confinement on dressing the child, she noticed something on his neck which she described as "a lump," and to which she called the attention of the midwife who had attended at her labour. This person, however, could not account for it, and as the child was quiet and seemed to suffer no pain, no more was thought about it for the time being. When a little over two weeks old, icterus became developed; the little one began to waste away rapidly, and as he lost flesh, the deformity about the neck became more and more apparent.

After a few days, during which no improvement had taken place in his condition, I was called to see the child. He was now about four weeks old; the skin was resuming its normal appearance, but he was greatly emaciated, and seemed very small, even making allowance for his wasted condition. On uncovering him, the first thing that attracted my attention was the deformity about the neck, which on examination proved to be a fracture of the clavicle near the acromial extremity, united by bony callus with considerable overlapping, and which, according to all appearances, must have occurred in utero at the time of the mother's fall, six weeks before. The other bones were intact, and seemed well developed, though very small.

Diffused False Traumatic Aneurism of Popliteal Artery; Ligature of Femoral; Recovery. Reported by GEORGE N. MONETTE, M.D., Visiting Physician to Charity Hospital, New Orleans, La.

J. R., æt. 25 years, was admitted to hospital on September 23d, with pistol-shot wound of each thigh, received on 8th instant. One entered inner side of right thigh, two inches below the inferior margin of Scarpa's triangle, ranging transversely and superficially beneath the integument, lodging on opposite and external border, embracing a diameter of four inches. There was a sudden hemorrhage, which was soon checked. No

other complication existed; the ball was excised same day; wound healed kindly.

The ball entering left leg, $3\frac{1}{2}$ inches above patella, ranged through posteriorly and on inner side of femur, severing one of the branches of the popliteal. Upon admission, he complained of some pain, the ball wounds were cicatrized firmly; a slight tremor was perceptible midway between two wounds. I ordered perfect immobility of limb, with cold water dressing for five days. He walked about the hospital during my absence, which broke up the adhesions, causing a different false aneurism. A distinct aneurismal thrill was felt on third day between the entrance and exit ball wounds. The femoral artery was compressed by the patients under my direction, until he could endure it no longer. The tourniquet was substituted, but with like want of success. Flexion upon the thigh was next resorted to, which compressed the tumour, diminished the size, and effected an almost perfect cure. He felt well enough to go home, walked several squares, when the aneurism reappeared. Seven days after leaving the hospital, he came under the care of Dr. W. After consultation, ligature of femoral was decided upon, which was done at inferior angle of Scarpa's triangle. The wound healed by first intention, absorption took place readily, and the aneurism disappeared. Ligature of femoral was only necessitated by his imprudence, otherwise the aneurism would have been cured by flexion.

285 Magazine St.

Chlorate of Potassa in Bowel Complaints.—ALFRED S. GATES, M.D., of Franklin Parish, St. Mary's, La., in a communication to us, extols the efficacy of chlorate of potassa in diarrhœa, especially that occurring as a sequela of measles. He writes: "My own child, æt. 18 months, after an attack of measles, suffered from dysentery; passages occurring every hour or two, which persisted for a month without any relief from the accepted remedies. In my extremity I mentioned the case to a medical friend, who advised me to use the chlorate of potassa in gr. iv doses every two hours; accordingly I prescribed: R. Potass. chlor. gr. xxxij, syr. simp. ℥ss, aq. pur. ℥ss, and gave as directed. After the third dose the character of the discharges was completely changed, the blood and mucus disappeared, and the child made a rapid recovery.

"Measles being epidemic, I saw several other cases with identical symptoms following desquamation. In every case the sufferers were relieved by the remedy. Meeting with success, I determined to give it a fair trial in cases which West, in his "Diseases of Children," calls inflammatory diarrhœa. It fully and completely realized my expectations. I have also used it in the dysentery of adults, though with no such decided success as in the above-mentioned cases; though I have reason to suppose that in two cases, in which my faith was shaken, the directions were not followed with any attempt at regularity."

A Case of Amputation of the Leg without Hemorrhage, by reason of Thrombosis. By E. P. SALE, M.D., of Aberdeen, Miss.

The reading of Dr. Liddell's paper upon "Thrombosis of Bloodvessels of the Lower Extremities" (see No. of this Journal for Jan. 1873) recalled to mind the case of David S., æt. 20, who was standing on a log, cutting, when the axe, which weighed five pounds, glanced on a bush and struck his foot just posterior to the tarso-metatarsal articulation, severing the foot al-

most entirely. He was seen by a neighbouring physician who found the hemorrhage very profuse, and which was not controlled entirely until after a period of eight hours, the amount of blood lost could not be accurately ascertained. I saw him twenty hours after the receipt of injury, he was then suffering much from shock and consequences of hemorrhage, evidenced by the hippocratic countenance, coldness of cutaneous surface, vomiting, and being pulseless; his condition was almost one of exsanguination; there was then no hemorrhage of consequence. Amputation was determined upon, but owing to his extreme anæmia, and for other reasons unnecessary to mention, it was postponed for a week, after which period, the portion of foot anterior to the wound was found to be gangrenous. The leg was amputated by Dr. Lowe just above the ankle, by the circular method; *no hemorrhage followed the operation*, and after watching the stump for several hours it was found unnecessary to apply even a single ligature; the patient reacted well and progressed, we are told by his friends, without an unfavourable symptom to complete recovery.

What agent rendered the operation bloodless? I cannot account for it, except by *thrombosis* of the anterior tibial, posterior tibial, and peroneal arteries and their recurrent branches; the state superinduced by anæmia which rendered the blood hyperinotic, as in formation of heart clot after a profuse *post-partum* hemorrhage.

DOMESTIC SUMMARY.

Quinia as a Parturient.—Dr. WM. L. LINCOLN, in his report on Obstetrics, made to the Minnesota State Medical Society, states that he confidently believes that quinia is a “valuable agent when dilatation has taken place, and the pains are not strong; we are sure that we have observed labour materially shortened by the administration of five grains of quiniæ sulph. And again, when the pains are irregular in regard to duration and interval, we have observed, in half an hour after the exhibition of the dose of quinia, regular pains as to strength and interval. One or two marked cases have come under our own observation, which bear upon the subject matter under consideration.

On the tenth day of June last we saw a lady who supposed herself to be in the fifth month of pregnancy, who had been flowing more or less all the time for three weeks, and had been taking remedies to prevent miscarriage, but who for the preceding twenty-four hours had been having occasional labour pains. An examination revealed a dilating os, but the pains were very irregular, sometimes occurring every four minutes for three or four pains and then there would be an interval of twelve minutes or more.

After watching the progress of labour for an hour, she got six grains of quinia, and in about half an hour we had the extreme satisfaction of observing that the pains were regular and strong until labour was completed, which occupied about an hour and a quarter. The doctrine has been advanced that if it is so certain a parturient it would be unsafe to administer quinia to pregnant women as a remedy in malarial fevers, for at any time the uterus might be stimulated to take on expulsive contractions. So far as we have noticed, no writer on the subject of malarial fever, gives a word of caution on the subject in days gone by, and we suppose that pregnant women have swallowed their portion of the potent drug in question; and if such are the facts, the question arises, why did not the whole malarial region of our land become depopulated in a generation, from miscarriage?

In the month of September two cases presented themselves for a test in this matter, and although the number is too small to be of much moment, yet they

seemed to be fair cases for trial. Mrs. W. was the subject of quotidian fever, and desired to have it broken up at once, as she expected to be in labour "any day." She said she was a hard subject to cure of ague, having succeeded in shaking every day, for five weeks, at one time in Illinois some four years previous. She took thirty grains of quinia sulph., in the twelve hours preceding the time for her next chill, and had no subsequent chill or fever. Her confinement was thirteen days later.

A few days subsequent, Mrs. B., reckoning that she was within two weeks at furthest of confinement, being ill of a tertian ague, took twenty grains of quinia in the twelve hours preceding her anticipated chill, breaking the fever just three weeks previous to her accouchement.

We offer these cases not to support a theory, but as simple facts to show that in those cases it proved safe to prescribe quinia in potent doses to pregnant women.—*Trans. Minn. State Med. Soc.*, 1873.

Paracentesis Thoracis.—Dr. BOWDITCH, of Boston, in a very interesting letter to Dr. Allbutt, of Leeds, England, published in *The Practitioner* for April, 1873, gives the following as some of the general conclusions to which his experience of this operation has led him.

"*First.*—I always operate *first* with a very small exploring trocar and canula, which latter can be attached to a suction pump. This is the general rule, and has not been departed from for years, owing perhaps to the fact that physicians in Boston and its vicinity rarely allow pus to remain so long as to 'point'—we operate long before that period arrives. I thrust the trocar in *fearlessly and quickly*, so as to avoid carrying the pleural false membrane before the canula instead of transfixing it. I choose a point in the back on a line with the angle of the scapula and between the eighth and ninth or ninth and tenth ribs, and at least an inch and a half above a horizontal line drawn through the lowest point at which the respiratory murmur is heard in the other lung. I draw fluid slowly, but as continuously as possible, as long as I can do so, or until severe pain or stricture over the chest, or any serious discomfort of any kind, comes on. Coughing does not always induce me to desist; but a severe harassing cough checks further operation. After the operation I advise entire rest for twenty-four hours at least. I have not been obliged to use opiates except once or twice, to check an *extravagant* cough; I should never check a mild one, as it is usually the healthful result of expansion of the lung.

"*Second.*—No amount or character or complication of disease, either cephalic, thoracic, or abdominal, prevents me from operating when I find a large effusion, or any effusion that I think is adding distress to a patient already very ill. In some such cases I operate simply to give relief, and I do so as freely as I would use a subcutaneous injection of morphia, prescribe a blister, or a cathartic. I had one case, in a very aged man who had had manifest cardiac disease, but who, at the time I was called to him, had been unable to lie down for two or three weeks, with general dropsy; the legs, abdomen, and the left pleura being all distended. Tapping the chest and drawing away over two quarts of serum relieved all the severe symptoms, and he lived for years afterwards. I therefore now *hope* for *more* than simple relief, even in the worst cases, and in those in which the prognosis would undoubtedly be for a fatal result unless relief can be obtained by the operation.

"*Third.*—Age and sex, and even the existence of pregnancy, I deem of no importance when considering the question of thoracentesis in a severe case. The youngest babe and the octogenarian, the strongest and fattest of men, with chest parietes so thick that my usual trocar (1½ inches long) failed to reach the interior of the chest, and the thinnest, most emaciated of women, have all alike been operated on. In a pregnant woman I tapped four times before and five times after delivery, and finally made a permanent opening: she lived many years afterwards in comparative comfort. In the case of my fat patient, I had simply to get a new and longer trocar, and success followed.

"My only criteria for judging as to the propriety of operating in any cases are the questions—

"Is the dyspnœa severe enough?

"Has it occurred, even once, so severely that in the eyes of attendants it has seemed to threaten life even momentarily?"

"Or, finally, has sufficient time elapsed for remedies to have effect without such effect being produced?"

"But, *fourth*, on this question of time, I fear I may not be able to satisfy either myself or you. I will, however, make one broad statement, viz., whenever I hear that a temporary orthopnoea has occurred, or that a severe dyspnoea is actually present, I never think of waiting, but *operate instantly*, however serious and complicated all the other signs may be. But if a patient has been ill only a few days or a week; if the effusion be small, the dyspnoea but slight; if remedies seem to be having a beneficial effect, I have hitherto, and I presume I may hereafter, let the fluid remain three or four weeks, perhaps, before *urging* an operation. My past experience has been in this direction, although perhaps I have erred in not doing as you suggest in the article already cited, viz., in not operating immediately after finding fluid effused even to a moderate amount. My reason does not give me valid grounds for delay, and certainly my experience of the effects of the operation suggests nothing but that pleasant results would follow it whenever performed. I think, therefore, we *may* operate in any case where the quantity of fluid is obviously so large as to seriously obstruct the greater part of a lung, as, for example, when the level of the fluid seems to rise to the middle of the back, and in so doing oppresses the respiratory murmur in the entire organ. But in such a case, if it did not cause serious symptoms, I might defer to the patient's wishes for a time, and delay the operation a few weeks.

"*Fifth*.—The character of the fluid, though it has at times influenced my prognosis, has never completely foiled me in the use of the exploring canula. Provided the operator steadily draws and does not interrupt the course of the fluid, coagulation can hardly take place in the minute instrument. Pus as thick as honey, and which required a little time to come to a level in the receiving basin, I have drawn through it. It is true, however, that on a few occasions (usually when first introducing the canula) I have been unable to draw out what I subsequently found to be serum. I have tried sometimes the throwing in (by reversing the operations of the pump) of a half-ounce, or less, of lukewarm water. This sometimes has removed the lymph (I presume) that obstructed the end of the canula, and the subsequent attempts to draw fluid have been successful. If, however, the obstruction has still continued, the withdrawal of the instrument becomes necessary, and the reintroduction in the intercostal space just above the previous point of puncture has always succeeded.

"*Sixth*.—Any '*valvular opening*' of the parietes, when using the trocar or in the common surgical operation, seems to me, in the light of my experience, worse than useless—absolutely bad. It is wholly uncalled for with the '*aspirator*' canula; and when an incision is made, it is impossible, in subsequent daily dressings of the wound and washings out of the pleura, to prevent the admission of air. It does harm by its liability to form a sinuous fistulous opening in the chest whereby the ribs may become eroded. Moreover, the *free* exit of pus is prevented by it, and phthisis is more likely to set in.

"*Seventh*.—When and how ought a permanent opening to be made? A decision on this point is often very difficult. Let me name a few favouring circumstances.

"(a) Youth is much more favourable than advanced life.

"(b) The length of time the disease has lasted, if short, is favourable, because it leads us to hope for an easy and early expansion of the compressed lung. If *many* months have elapsed since the disease began, we can have rather less hope. But mere length of time, however long, should not prevent us from making it, provided the operation seems called for by urgent symptoms.

"(c) Uncomplicated pleuritic effusion is, of course, more favourable than when the patient suffers also from other diseases.

"Hence I incline to make a permanent opening in a young or middle-aged generally healthy subject, one who has been ill but a short time. Moreover

he must have been operated on at least once with the "aspirator," and pus must have been drawn. Moreover, this pus must show a tendency to reaccumulate rapidly. In such a case, and with serious symptoms supervening on the return of the effusion, a permanent opening may be made, I think, with a good hope of success, provided the subsequent treatment be also wise.

"On the contrary, a person above middle life, who has been long ill and afflicted with cough and other symptoms of phthisis, is one in whose case, until very lately, I should have preferred repeated tapplings with the 'aspirator,' for I have feared the risk of hectic fever setting in under the influence of the constant drain of a long flow of pus. I frankly confess to a grave suspicion whether I have not erred in some of these cases; for certainly, though few have eventually *wholly* recovered, yet their lives have been lengthened and made more tolerable by the operation.

"But there is a class of intermediate cases between these two extremities, which at times bitterly tests a man's powers of exact differential diagnosis or prognosis. All that can be said is, that each case must be minutely and accurately examined, and the question of making a permanent opening decided only after a searching analysis of all the circumstances connected with it. While serous fluid is drawn by the 'aspirator,' I *think* we should not be justified in making a permanent opening with the absolute certainty that pus will soon be formed. Upon this question, however, we need facts.

"Blood, unless it be in the chest from an external injury, and needing a surgical operation for its removal, should always contra-indicate a permanent opening; for, in my experience, a bloody fluid at the *first tapping* has always indicated serious, and generally malignant disease of the lung or pleura, and therefore a permanent opening seems contra-indicated.

"*Eighth.*—How shall a permanent opening be made? Formerly I used silver tubes. At times I have used those of gum elastic. One patient contrived for himself a spiral silver-plated wire tube. This he found easier than either of the others. The silver tubes are painful. Those of gum elastic have, at times, broken off into the pleural cavity. I know of one case, under the care of a professional associate, in which this accident caused great suffering. Moreover, all such tubes, of whatever substance made, are liable to become clogged. Very evil results also may follow, unless great care be taken. For example, although there may seem to be a daily free discharge of pus, a quantity of it may accumulate *below* the point at which the tube enters the chest, and there become semi-solid and fetid. The possible consequences of this state of things, as actually occurred in one of my own patients, are hectic fever and many of the symptoms of phthisis. In the case alluded to they continued to increase until I began thoroughly to wash out the cavity with warm water, and the removal was made by this means of a large quantity of very fetid pus. Relief to all unfavourable signs immediately supervened, with ultimate recovery of the patient. When, therefore, hereafter I shall have made up my mind that a permanent opening is needed to prevent the constant reaccumulation of pus, my reason, and the small but very satisfactory result in two cases in which that operation has been done by free incision through an intercostal space, will induce me to advise that proceeding rather than the use of any tube or trocar, however large. That incision I should generally advise should be made low in the back instead of in front as advised formerly in books of surgery. The dissection should be made carefully down to the pleura, and the cavity laid open to the extent of at least two inches, perhaps more, provided the free exit of pus can be made more thorough. I shall make no effort to keep out the air by valvular openings, because I know I cannot prevent it from entering, and because I believe it will do no harm—certainly much less harm than any contrivance which, while trying to exclude air, prevents the free passage of all fluids out. I shall have that aperture kept freely open by lint until the cavity has fully healed from the interior, if that be possible. I shall use, from the second or third day, simple warm water or carbolized water injections into the pleura; and I shall let all fluids drain into a large poultice, or mass of cotton wadding, placed on the chest."

Two Nævi cured by Monsel's Solution applied externally.—Dr. GEIGER, of St. Joseph's, Mo., reports (*Am. Practitioner*, April, 1873) the case of a male child, aged nine months, who had at birth a "mother's mark" on his perineum and over the pit of his stomach. They were at first flat but slightly elevated spots, and quite small. When the patient was about six months old, however, the tumours took on a very rapid growth; that on the perineum occupying not only the entire perineum, but a portion of the scrotum also, while that on the abdomen was an inch in diameter. The perineal nævus was kept constantly irritated by the child's diaper, his urine, and his feces, and on more than one occasion bled considerably. The mother positively refused her consent to any other procedure than one which consisted in some external application. Dr. G. determined, therefore, to try the methodical use of Monsel's solution to both the growths. Making a mixture of equal parts of the liq. ferri persulph. and glycerine, he painted not only the nævi themselves thoroughly with this, but applied it also for some lines beyond to the healthy skin, and directed it to be repeated twice daily. In a week both tumours had diminished appreciably in size; and in less than one month from the date of the first application of the iron they had disappeared altogether.

Abscess of the Larynx in young Children.—Dr. JOHN S. PARRY describes (*Phila. Med. Times*, June 14th, 1873) two interesting cases of this rare disease, which came under his notice in his wards in the Philadelphia Hospital.

CASE I. John L., æt. 4½ months, negro, well nourished, wet-nursed by his mother, who is healthy. The mother called his attention to the child, who had been irritable and cross she said for two or three days. He had not nursed well, though she did not observe any difficulty in swallowing. During the preceding day he had suffered from difficulty in breathing, with noisy inspiration, and total inability to swallow.

At the time of the examination he was lying upon his mother's lap, with his head thrown back. The muscles of the back of the neck were rigid; eyes prominent; respiration exceedingly laborious, and attended with vigorous movements of the alæ nasi; inspiration long, difficult, and stridulous. During inspiration the base of the thorax was surrounded by a transverse constriction. This disappeared during expiration, which was easy and noiseless. The voice was almost whispering, and his cry almost suppressed. The dyspnœa was so great as to prevent any attempt at crying or moving. He had no cough. The larynx was thrust forward so as to form a decided tumor in the neck. The anterior margin of the thyroid cartilage was sharply defined. There was some swelling upon either side of the larynx, at the posterior margin of the thyroid cartilage. It did not fluctuate. The examination gave rise to pain and uneasiness, but did not increase the dyspnœa. The boy was totally unable to nurse or to swallow either fluids or soft solids.

The chest was resonant on percussion. No râles could be heard in any part of it. The respiratory murmur was scarcely audible. His tongue was furred, and the mouth filled with mucus. A careful inspection of the pharynx revealed no disease, and an examination with the finger showed that there was not a retro-pharyngeal abscess. The epiglottis and parts around were examined with the finger and did not appear to be oedematous. This greatly increased the dyspnœa, and nearly cost the child his life. The patient was carefully watched, with directions not to allow him to die without the operation of tracheotomy having been performed. Warm poultices were applied to the throat to favour suppuration, under the impression that there was an abscess behind the larynx.

During the succeeding two days the prominence of the larynx increased, while the swelling extended from behind forwards. At this time it was thought that there was slight fluctuation near the median line, over the thyroid cartilage. An incision was made from the superior to the inferior margin of this, directly in the median line, and nearly two fluidrachms of thick yellow pus flowed out. The larynx immediately receded, the swelling disappeared, the intense dyspnœa and dysphagia ceased at once. From that moment recovery commenced, and there was not a symptom of disease afterwards.

CASE II. Boy æt. 9 weeks, healthy when born, but when less than a week

old he was attacked with erysipelas of the buttocks, which gradually spread upward until the whole of the body and head were affected. This was followed by an abscess over the upper part of the occipital bone, near the posterior fontanelle. The contents of this were withdrawn by the aspirator twelve days before the present disease began, and again ten days before. The abscess immediately refilled, and it was opened with a knife three days ago. The erysipelas exhausted the child greatly, but during the last month he has been improving. The present illness began suddenly ten days ago, with a wheezing in his throat. This was accompanied by some swelling about the larynx, and some noise in breathing. These symptoms continued until last evening.

Present Condition.—Lies with his eyes half closed and his head thrown back, as in commencing opisthotonos. The muscles on the back of the neck are rigid and tense.

The *alæ nasi* move rapidly in breathing. The external muscles of respiration are called into use, those of the neck acting violently. The sternum is arched forward. During inspiration the convexity of this bone is increased, and a deep gutter appears around the base of the chest, on a line with the ensiform cartilage. During expiration this disappears, so that the thorax is actually larger during the expiratory than during the inspiratory act. Breathing from forty to fifty, irregular. Inspiration extremely difficult, prolonged, and attended with a sharp stridulous sound which can be heard all over the ward. Expiration easy and noiseless; but little cough. The sound is hoarse, broken, and tends to become whispering. Cry nearly suppressed, but aphonia not quite complete. The thorax everywhere resonant on percussion, and auscultation reveals no evidences of disease of the lungs. Respiratory murmur inaudible; laryngeal sound heard by transmission over the whole of the surface of the chest.

Physical examination of the pharynx reveals no tumour; epiglottis can be distinctly felt, and there seems to be a little puffiness upon either side of its base. The examination produced much uneasiness, and was followed by profound dyspnoea; larynx thrust forward so as to produce a decided prominence on the anterior surface of the neck; some swelling just over the posterior margins of the thyroid cartilage; no fluctuation. The examination causes pain.

Tongue furred, mouth filled with dense opaque mucus, stomach irritable, and bowels constipated. Has considerable difficulty in swallowing, and cannot nurse at all; pulse weak, irregular, and from 140 to 160. The irregularity occurs during inspiration.

He continued to grow worse during the succeeding night, and died the next day of dyspnoea.

Post-mortem.—Pharynx perfectly healthy; larynx removed with the tongue and upper part of the trachea. The anterior aspect presented the following appearances: In the middle line and a short distance to either side, bounded by the inner border of the sterno-thyroid muscles, there was distinct fluctuation. Posteriorly to the outer margins of the same muscles, and upon either side, were other fluctuating swellings. The two projections communicated, and an impulse was transmitted from the surface of one to all the others; epiglottis erect, thin, and pale; cavity of the larynx nearly obliterated; contained no false membrane, and the mucous membrane was pale and healthy. Immediately without the epiglottis, between its base and the superior inner margin of the thyroid cartilage, were two fluctuating swellings, one upon either side. These compressed the epiglottis so that its lateral margins were nearly in contact and likewise nearly obliterated the rima glottidis. Fluctuation was communicated from these swellings to those on the sides and the centre of the anterior outer surface of the organ.

Upon making an incision in the median line, over the prominence of the thyroid cartilage, more than two drachms of thick yellow pus flowed out. The fluctuating prominences on the exterior and interior of the larynx immediately collapsed, and the cavity of the organ was restored to its natural size. A probe could be passed through the incision backwards, and around the posterior margins of the thyroid cartilage, upon either side, so as to put the mucous membrane of the interior of the larynx upon the stretch at any point. Perichondrium was separated from the thyroid cartilage upon both its inner and outer

surfaces. Both surfaces were eroded and rough, while its tissue was softer than when healthy. Cricoid cartilage perfectly healthy. Other organs of the body healthy.

The prognosis of this disease of the larynx, Dr. P. remarks, is evidently very serious, and to save the patient the treatment must be prompt and efficient. As soon as it is suspected, the child must be carefully watched. In the first case a free incision from the upper to the lower margin of the thyroid cartilage was followed by instantaneous relief and complete recovery. In the second the same result would probably have followed if we had boldly plunged the bistoury in. If the abscess can be opened in the median line, it should be done; and if not, the incision must be made upon a line with the posterior border of the thyroid cartilage, though it is true that in this locality some care has to be exercised, as the incision has to be made close to large vessels.

If this does not give relief, only one course is open—that is, to perform tracheotomy, with the hope that the life of the patient may be prolonged until the pus is discharged. Any one who has seen a case of this kind can have no doubt in regard to the propriety of such a proceeding.

Reclamation by L. A. Dugas, M.D., Prof. of Surgery in the Medical College of Georgia.

AUGUSTA, GA., May 10th, 1873.

To the Editor of the American Journal of the Medical Sciences.

I find in looking over the last edition of Professor Gross's great work upon Surgery that my diagnosis in dislocations of the shoulder is incorrectly stated, and I therefore beg leave to make a correction through the pages of your valuable Journal.

The statement of my views on the subject may be found in the *Southern Medical and Surgical Journal*, published in this city in March, 1856, p. 131, and also in the *Transactions of the American Medical Association* for 1857. The following is my language:—

"If the fingers of the injured limb can be placed by the patient or by the surgeon, upon the sound shoulder *while the elbow touches the thorax*, there can be no dislocation; and if this cannot be done, there must be a dislocation. In other words, it is physically impossible to *bring the elbow in contact with the sternum or front of the thorax* if there be a dislocation; and the inability to do this is *proof positive* of the existence of dislocation, inasmuch as no other injury of the shoulder joint can induce this disability."

This is very plain, and yet Prof. Gross, on page 69 of vol. ii., says, "Another sign, although not an infallible one, first pointed out by Dr. Dugas, of Georgia, is the inability which the patient experiences in touching the sound shoulder with the hand of the injured limb." Now, it is evident that Prof. Gross, inadvertently I am sure, leaves out one of the essential elements of my diagnosis, by the omission of the condition upon which rests the inability to touch the sound shoulder with the hand of the injured limb; that is to say, that *the elbow shall touch the front of the thorax*. Prof. G. is unquestionably right in pronouncing the diagnosis as stated by him "not an infallible one;" but, I respectfully insist that *it is* infallible as announced in my publications.

I have no personal aspirations to gratify by making this reclamation, but do so in order to vindicate the claims of American surgery. New elements of diagnosis, especially when based upon unerring physical laws, have been ever since the days of Laennec regarded as among the most valuable contributions to medical knowledge, inasmuch as they alone can lead us to sound practical deductions. If there be any merit in my diagnosis, let our country have the credit that may attach to it.

Yours very respectfully,

L. A. DUGAS.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

ONE HUNDRED AND EIGHTH SESSION.

Ninth Street, above Chestnut, Philadelphia.

The Lectures of the Session of 1873-4 will commence on the First Monday (6th) of October, and close on the last day of February ensuing.

MEDICAL FACULTY.

GEORGE B. WOOD, M.D., Emeritus Professor of Theory and Practice of Medicine.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH CARSON, M.D., Professor of Materia Medica and Pharmacy.
ROBERT E. ROGERS, M.D., Professor of Chemistry.
JOSEPH LEIDY, M.D., Professor of Anatomy.
FRANCIS G. SMITH, M.D., Professor of Institutes of Medicine.
R. A. F. PENROSE, M.D., { Professor of Obstetrics and the Diseases of Women and Children.
ALFRED STILLÉ, M.D., { Professor of Theory and Practice of Medicine, and of Clinical Medicine.
D. HAYES AGNEW, M.D., Professor of Surgery.
H. LENOX HODGE, M.D., Demonstrator of Anatomy.

Clinical Instruction is given daily throughout the year, in the Medical Hall, by the Professors and Clinical Lecturers, and twice a week at the Hospitals. At the Philadelphia Hospital, and at the Pennsylvania Hospital, the instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the first of September.

The room for Operative Surgery and the Application of Bandages, etc. etc., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

Lectures are delivered by the members of the Summer Association annually during the months of April, May, and June, September, and the early part of October.

The lectures of this Preliminary Course will this year begin on Monday, September 1, and continue until the opening of the Regular Session. These Lectures are free to all matriculates of the University, upon registering their names with the Secretary of the Association, who will furnish them with tickets.

EXPENSES.—Fees for the Course of Lectures, \$140. Matriculation Fee (paid once only), \$5. Graduating Fee, \$30.

R. E. ROGERS, M.D.,

Dean of the Medical Faculty, University Building.

W. H. SALVADOR, *Janitor, University Building.*

P. S.—Board may be had at from \$5 00 to \$6 00 per week.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1873-74.

THE Collegiate year in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1873-74, will commence on Wednesday, September 17, 1873, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students designing to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, October 1st, 1873, and end about the 1st of March, 1874.

FACULTY.

ISAAC E. TAYLOR, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M.D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

FRANK H. HAMILTON, M.D., LL.D., Professor of Practice of Surgery with Operations and Clinical Surgery.

LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M.D., Professor of Clinical and Operative Surgery.

W. H. VAN BUREN, M.D., Professor of Principles of Surgery with Diseases of the Genito-Urinary System and Clinical Surgery.

WILLIAM T. LUSE, M.D., D. WARREN BRICKELL, M.D., Professors of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

WILLIAM A. HAMMOND, M.D., Professor of Materia Medica and Therapeutics, Diseases of the Mind and Nervous System, and Clinical Medicine.

AUSTIN FLINT, JR., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSBY, M.D., Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., Professor of Chemistry and Toxicology.

Professors of Special Departments, etc.

HENRY D. NOYES, M.D., Surgeon to the Charity Hospital, etc.; Professor of Ophthalmology and Otology.

EDWARD L. KEYES, M.D., Surgeon to the Charity Hospital, etc.; Professor of Dermatology, and Assistant to the Chair of Principles of Surgery, etc.

EDWARD G. JANEWAY, M.D., Physician to the Bellevue Hospital, etc.; Professor of Pathological and Practical Anatomy. (Demonstrator of Anatomy.)

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons to the Bellevue Hospital and the great Charity Hospital on Blackwell's Island.

The Summer Session will consist chiefly of Recitation from Text-books. This term continues from March 17th to July 1st. During this Session there will be daily recitations in all the departments held by a corps of examiners appointed by the regular Faculty. Regular Clinics will also be held.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including	
Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations and Clinics	50 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. AUSTIN FLINT, JR., Bellevue Hospital Medical College.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS.

NINETIETH ANNUAL ANNOUNCEMENT. (1873-74.)

The plan of Study in this School was radically changed in 1871. Instruction is now given by lectures, recitations, clinical teaching, and practical exercises uniformly distributed throughout the academic year. This year begins September 25, and ends on the last Wednesday in June; it is divided into two equal terms, with a recess of one week between them. There is also a recess of one week at Christmas. Either of these two terms is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction.

The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically, from one subject to another in a just and natural order. Instead of the customary hasty oral examination for the Degree of Doctor of Medicine, held at the end of the three years' period of study, a series of examinations on all the main subjects of medical instruction has been distributed for regular students through the whole three years; but they may be passed by other students either all at once or at the end of their course, or, successively, at several times. Every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction at some time during his period of study. The general subjects of the Regular Course of study are:

For the First Year—Anatomy, Physiology, and General Chemistry.

For the Second Year—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

For the Third Year—Pathological Anatomy, Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Students who take the regular course of the School are divided into three classes, according to their time of study and proficiency. Students may be admitted to advanced standing in the regular course; but all persons who apply for admission into the second or third year's class, must pass an examination in the branches already pursued by the class to which they seek admission. Students who fail in any subject at one examination may be examined again at the next examination. The regular examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and Chemistry.

" " second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

" " third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Examinations are also held a week before the opening of the School in September, and at the close of the first term in February, but the latter is open only to students joining the School at that time and to those who have failed at previous examinations.

Students who began their professional studies elsewhere, may be admitted to the School and become candidates for a degree without joining the regular classes; such students may take up the subjects which they have not previously studied, in such order as may be thought best, passing the examinations at the beginning and end of each year. Students who do not intend to offer themselves for a degree, may join the School for one term or more, and pay for instruction in such subjects as they select. Such students will be furnished, without examination, with certificates of attendance.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this School, have passed the required examinations, and have presented a thesis.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine, additional facilities for pursuing clinical, laboratory, and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises the following branches: Physiology; Medical Chemistry; Pathological Anatomy; Surgery; Auscultation, Percussion, and Laryngoscopy; Ophthalmology; Otolaryngology; Hygiene; Dermatology; Syphilis; Psychological Medicine; Electro-Therapeutics; Gynecology, and Obstetrics.

Those pursuing this course may elect the studies to which they will give their attention, and allot the time they will devote to each. They will have the privilege of attending any of the other exercises of the Medical School, the use of its laboratories and library, and all other rights accorded by the University. They will be exempt, unless at their option, from examinations, and may obtain a certificate of attendance on this course of advanced study. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—For Matriculation, \$5; for the Year, \$200; for either term, \$120; for Graduation, \$30; for courses in single subjects, according to the detailed announcement in catalogue.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

DR. C. ELLIS, *Dean*, 114 Boylston Street, Boston, Mass.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA,

NEW ORLEANS.

MEDICAL FACULTY.

A. H. CENAS, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

JAMES JONES, M.D., Professor of Obstetrics and Diseases of Women and Children.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLÉ, M.D., Professor of Physiology and Pathological Anatomy.

FRANK HAWTHORN, M.D., Professor of Materia Medica and Therapeutics, and Clinical Medicine.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

Demonstrator of Anatomy, EDMOND SOUCHON, M.D.

The next annual course of instruction in this Department (now in the fortieth year of its existence), will commence on Monday, the 17th day of November, 1873, and terminate on the third Saturday of March, 1874. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 20th of October, without any charge to students.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for Clinical Instruction.

The act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received during the last year more than *six thousand* patients. Its advantages for professional study are unequalled by any similar institution in this country. The medical, surgical, and obstetric wards are visited by the respective professors in charge daily, from 8 to 10 o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Hawthorn, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administration of the hospital elect annually twelve resident students who are maintained in the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Graduates of other recognized schools may attend all the lectures upon payment of the matriculation fee; but they will not be admitted as candidates for the Diploma of the University except upon the terms required of second course students. All fees payable in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean*.

PHILADELPHIA SCHOOL OF ANATOMY,

Chant Street, Tenth Street above Chestnut, opposite the Mercantile Library.

COURSES OF LECTURES ON PRACTICAL SUBJECTS.

The following Courses of Lectures will be delivered in this Institution during each WINTER and SUMMER Session.

- | | |
|---|------------------------|
| I. Anatomy | By Dr. W. W. KEEN. |
| II. Operative Surgery | " Dr. W. W. KEEN. |
| III. Bandaging, Fractures, and Fracture Dressings | " Dr. O. H. ALLIS, |
| | 1005 Walnut Street. |
| IV. Physical Diagnosis | " Dr. STANLEY SMITH, |
| | 201 South 11th Street. |

The Course on ANATOMY begins the day after the Colleges open in October and in April, and consists of systematic Lectures, amply illustrated by the Class Microscope, Dissections, Models, &c.

The DISSECTING ROOMS are open all the year, except July and August, with a full supply of material.

Each of the other Courses begins one week later, and consists of practical demonstrations to the class, after which each member in turn is exercised in the various operations, applies the bandages or fracture dressings, or auscults and percusses the patients.

Fee for each Course \$10.

For further information, apply to the Janitor, at the Rooms, or to

W. W. KEEN, M.D.,
1729 Chestnut Street. (3½ to 5 P.M.)

THE WILLS OPHTHALMIC HOSPITAL,

Race Street, between Eighteenth and Nineteenth Sts., Philadelphia.

A COURSE OF LECTURES, DIDACTIC AND CLINICAL, ON OPHTHALMIC SURGERY, will be given at the Hospital during the months of November, December, and January, on Saturday evenings, between 8 and 10 o'clock.

The course will embrace all of the important branches of Ophthalmic Science, and will include the *Anatomy and Pathology of the Eye, the Physiology of Vision, the Refraction and Accommodation of the Eye, the Use of the Ophthalmoscope, and the Operative Surgery of the Eye.*

The large Clinics of the Hospital will afford abundant opportunities for the demonstration of the *General Diseases, Optical Defects, and Operative Surgery of the Eye.*

Each member of the class will be afforded instruction in the Use of the Ophthalmoscope, and in the practice of Operations on the Cadaver.

The Diagnosis of the Optical Defects which produce *Long, Short, or Weak Sight, Astigmatism, Strabismus, etc.*, and their Correction by the Scientific Use of Glasses, will be illustrated by apparatus and Clinical demonstration.

FEE FOR THE COURSE TEN DOLLARS.

Operative and Clinical Surgery of the Eye.

R. J. LEVIS, M. D., N. W. cor. Arch and 13th Sts.

Anatomy of the Eye, and Ophthalmoscopy.

GEO. C. HARLAN, M.D., 1806 Chestnut St.

Physiology of Vision, Refraction, and General Diseases of the Eye.

EZRA DYER, M.D., 1429 Walnut St.

JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

The next Annual Session will commence on Monday, 6th October, 1873. Preliminary Lectures will begin on the first Monday in September.

FACULTY.

JOSEPH PANCOAST, M.D.,	Professor of Anatomy.
SAMUEL D. GROSS, M.D.,	Professor of Surgery.
ELLERSLIE WALLACE, M.D.,	Professor of Obstetrics.
B. HOWARD RAND, M.D.,	Professor of Chemistry.
JOHN B. BIDDLE, M.D.,	Professor of Materia Medica.
J. AITKEN MEIGS, M.D.,	Professor of Institutes of Medicine.
J. M. DaCOSTA, M.D.,	Professor of Practice of Medicine.

Fees for full course, \$140; Matriculation, \$5; Graduation, \$30.

The number of Matriculates for the session 1872-3 was 462; of Graduates, 149.

J. B. BIDDLE, M.D.,

Dean of the Faculty.

UNIVERSITY OF MICHIGAN—MEDICAL DEPARTMENT.

THE Lectures of the Session 1873-74 will commence on the first day of October, and continue for six months.

Besides the Clinical Lectures, four Didactic Lectures will be delivered daily through the entire term.

A Course separate, but equal, for women.

FEES.—To students of Michigan, \$20 for the first year; \$10 for all subsequent years.

To all others, \$35 for the first year, and \$10 for all subsequent years.

For circulars address,

ABM. SAGER, M.D.,

Dean of the Medical Faculty, Ann Arbor, Michigan.

UNION UNIVERSITY—ALBANY MEDICAL COLLEGE, 1873.

FACULTY OF MEDICINE.

JAMES McNAUGHTON, M.D., Theory and Practice of Medicine.

JAMES H. ARMSBY, M.D., Principles and Practice of Surgery and Clinical Surgery.

EDMUND R. PEASLEE, M.D., LL.D., N. Y. City, Diseases of Women.

MEREDITH CLYMER, M.D., N. Y. City, Diseases of the Nervous System and of the Mind.

WILLIAM P. SEYMOUR, M.D., Troy, N. Y., Obstetrics and Diseases of Children.

JOHN V. LANSING, M.D., Physiology and Clinical Medicine.

ALBERT VANDERVEER, M.D., General and Special Anatomy.

HENRY R. HASKINS, M.D., Surgical and Descriptive Anatomy.

GEORGE T. STEVENS, M.D., Ophthalmic and Orthopedic Surgery.

JOHN M. BIGELOW, M.D., Materia Medica and Therapeutics.

MAURICE PERKINS, A.M., M.D., Schenectady, N. Y., Chemistry and Toxicology.

HON. IRA HARRIS, LL.D., Medical Jurisprudence.

WILLIAM HAILES, M.D., Demonstrator of Anatomy.

WILLIS G. TUCKER, M.D., Assistant to the Prof. of Chemistry.

The next Annual Course of instruction will commence on the 1st Tuesday of September, 1873, and continue twenty weeks. The City Hospital, in the immediate neighbourhood of the College, furnishes abundant facilities for the illustration of Clinical Medicine and Surgery. The Dissecting-Rooms are kept amply supplied with anatomical material, and the working Laboratory affords special advantages for the study of Chemistry.

FEES for the Course, \$100; Perpetual Ticket, \$150; Graduation Fee, \$25; Matriculation, \$5. Board may be had from \$4 to \$6 per week. For further information address

J. V. LANSING, M.D., *Registrar*, Albany, N. Y.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR OCTOBER 1873.

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 A. YOUNG, M.D., *of Prescott, Iowa.*

TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Quarantaines. Par M. le Dr. LÉON COLIN, Médecin Principal de l'Armée. Extrait du Dictionnaire Encyclopédique des Sciences Médicales.

Die Orthopaedische Behandlung der Pott'schen Kyphose. Von CHAS. FAYETTE TAYLOR, A.M., M.D. Berlin: 1873.

A Treatise on the Continued Fevers of Great Britain. By CHARLES MURCHISON, M.D., LL.D., F.R.S., Phys. and Lecturer on the Prin. and Prac. of Medicine, St. Thomas's Hospital. Second edition. London: Longmans, Green & Co., 1873.

Observations on the Surgical Treatment of In-growing Toe-nail. By GEORGE STILWELL, Surgeon, Epsom. London: J. & A. Churchill, 1873.

On the Results of Thyrotomy for the Removal of Growths from the Larynx. By MORELL MACKENZIE, M.D. Lond. London: J. & A. Churchill, 1873.

On the Causation of Sleep; A Physiological Essay. By JAMES CAPPIE, M.D. Edinburgh: James Thin, 1872.

Fever and Cholera from a New Point of View. By ALEXANDER SMITH, M.D., Edin., Staff Surgeon-Major. Calcutta: Wm. Smith, 1873.

Experimental Researches on the Causes and Nature of Catarrhus *Æstivus* (Hay-fever or Hay-asthma). By CHARLES H. BLACKLEY, M.R.C.S. Eng. London: Baillière, Tindall & Cox, 1873.

On Marienbad Spa and the Diseases curable by its Water and Baths. By APOLLINARIS VICTOR JAGIELSKI, M.D. London: Trübner & Co., 1873.

On Nervous or Sick-Headache; its Varieties and Treatment. By P. W. LATHAM, M.D., Phys. to Addenbrooke's Hosp. Cambridge: Deighton Bell & Co., 1873.

A New Operation for Anchylosis of the Elbow-joint resulting from Fracture, and Rigidity the Result of Unreduced Dislocation. By PATRICK HERON WATSON, M.D., F.R.S. Edinburgh, 1873.

Body and Mind; an Inquiry into their Connection and Mutual Influence, specially in reference to Mental Disorders. An enlarged and revised edition. To which are added Psychological Essays. By HENRY MAUDSLEY, M.D., F.R.C.P., Prof. of Med. Jurisprudence in Univ. Coll., Lond., etc. London: Macmillan & Co., 1873.

On the Treatment of Diseases of the Skin; with an Analysis of Eleven Thousand Consecutive Cases. By Dr. McCALL ANDERSON, Prof. of Prac. of Med. in Anderson's Univ., etc. Philadelphia: Henry C. Lea, 1873.

Chemistry; General, Medical, and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. By JOHN ATTFIELD, Ph.D., F.C.S. Fifth edition, revised from the fourth (English) edition, by the author. Philadelphia: Henry C. Lea, 1873.

An Introduction to the Study of Clinical Medicine; being a Guide to the investigation of Disease. For the use of Students. By OCTAVIUS STURGES, M.D. Cantab., Assist. Phys. to the Westminster Hospital, etc. Philadelphia: Henry C. Lea, 1873.

Handbook of Physiology. By WILLIAM SENHOUSE KIRKES, M.D. Edited by W. MORRANT BAKER, F.R.C.S., Lect. on Phys., and Assist. Surgeon to St. Bartholomew's Hosp., etc. With two hundred and forty-eight illustrations. A new American, from the eighth enlarged English edition. Philadelphia: Henry C. Lea, 1873.

The Diseases of the Prostate; their Pathology and Treatment. Comprising the Jacksonian Prize Essay for the year 1860. By Sir HENRY THOMPSON, F.R.C.S., Surgeon Extraordinary to H. M. the King of the Belgians. Fourth edition. Philadelphia: Henry C. Lea, 1873.

A Manual of Medical Jurisprudence. By ALFRED SWAINE TAYLOR, M.D., F.R.S., Prof. of Med. Jurisprudence and Chemistry in Guy's Hospital. Seventh Am. edition, revised from the author's latest notes, and edited, with additional notes and references, by JOHN J. REESE, M.D., Prof. of Med. Jurisprudence and Toxicology in the Univ. of Penn. With illustrations on wood. Philadelphia: Henry C. Lea, 1873.

Chemistry, Inorganic and Organic; with experiments. By CHARLES LOUDON BLOXAM, Prof. of Chemistry in King's Coll., London, etc. From the second and revised English edition. Philadelphia: Henry C. Lea, 1873.

Contributions to Practical Surgery. By GEORGE W. NORRIS, M.D., late Surgeon to the Pennsylvania Hospital, etc. Philadelphia: Lindsay & Blakiston, 1873.

Pharmaceutical Lexicon; designed as a Guide for the Pharmaceutist, Druggist, Physician, etc. By H. V. SWERINGEN. Philadelphia: Lindsay & Blakiston, 1873.

Skin Diseases; their Description, Pathology, Diagnosis, and Treatment. By TILBURY FOX, M.D. Lond., Phys. to Depart. for Skin Dis. in University Coll. Hosp. Second Am. from third London ed. New York: William Wood & Co., 1873.

Insanity in its relations to Crime. A Text and a Commentary. By WILLIAM A. HAMMOND, M.D. New York: D. Appleton & Co., 1873.

The Cerebral Convolutions of Man, represented according to Original Observations, especially upon their development in the Fœtus. By ALEXANDER ECKER, Prof. of Anatomy and Comp. Anat. in Univ. of Freiburg, Baden. Translated by ROBERT T. EDDES, M.D. New York: D. Appleton & Co., 1873.

Clinical Electro-Therapeutics, Medical and Surgical; a Handbook for Physicians in the Treatment of Nervous and other Diseases. By ALLAN McLANE HAMILTON, M.D., Phys. in Charge of N. Y. State Hosp. for Dis. of Nervous Syst., etc. With numerous illustrations. New York: D. Appleton & Co., 1873.

The Medical Department of the United States Army from 1755 to 1873. Compiled under the direction of the Surgeon-General, by HARVEY E. BROWN, Assist. Surgeon U. S. Army. Washington, 1873.

The Handbook for Midwives. By HENRY FLY SMITH, B.A., M.B. Oxon., formerly Phys. to "The Dispensary," Exeter, etc. Boston: James Campbell, 1873.

Six Months under the Red Cross, with the French Army. By GEORGE HALSTEAD BOYLAND, M.D., Ex-chirurgien de l'Armée Française. Cincinnati: Robert Clarke & Co., 1873.

Physician's Pocket-case Record Prescription Blank Book. Cincinnati: Robert Clarke & Co., 1873.

Clinical Reports from Private Practice. By JOHN HERBERT CLAIBORNE, A.M., M.D., Vice-President of the Medical Society of Virginia, etc. Petersburg: 1873.

Fractures of the Elbow-joint. By WALTER EVA. Cambridge: 1873.

Ideal Characters of the Officers of a Hospital for the Insane. By I. RAY, M.D. Philadelphia, 1873.

Ergot in the Treatment of Nervous Diseases. By DANIEL H. KITCHEN, M.D., Assist. Phys. of the New York State Lunatic Asylum.

The Etiology and Indications for Treatment of Irregular Uterine Action during Labour. By WILLIAM T. LUSE, M.D. New York, 1873.

Accommodation and Refraction. By DUDLEY S. REYNOLDS, M.D. Louisville, 1873.

Decision in a Suit of Malpractice. Carpenter v. Blake.

A Botanical Index to all the Medicinal Plants, Barks, Roots, Seeds, and Flowers usually kept by Druggists. By ALLAN POLLOCK, Druggist. New ed., revised and enlarged. New York: Allan Pollock, 1873.

An Eye Case in the Courts. By C. A. ROBERTSON, A.M., M.D. Albany, 1873.

On Strictures of the Urethra. Results of Operations with the Dilating Urethrotome, with Cases. By F. N. OTIS, M.D. New York, 1873.

Progressive Myopia and its Operative Cure. By RICHARD H. DERBY, M.D., Ophthalmic Surgeon to the Demilt Dispensary. New York, 1873.

The Local Use of Tar and its Derivatives, including Carbolic Acid, in the treatment of Skin Diseases. By L. D. BULKLEY, A.M., M.D.

Recent Improvements in Ophthalmic Surgery. By D. S. REYNOLDS, M.D. Louisville, 1873.

The Proper Treatment of Children, Medical or Medicinal. By CHARLES E. BUCKINGHAM, M.D., Prof. of Midwifery in Harvard Univ. Boston: A. Williams, 1873.

Varicocele and its Radical Cure. By OCTAVIUS A. WHITE, M.D. New York, 1873.

Ruptured Perineum. By ALEX. B. TADLOCK, M.D., of Tennessee.

Black Vomit of Yellow Fever. General Conclusions as to the Nature of Yellow Fever. By JOSEPH JONES, M.D. New York, 1873.

Observations on the Treatment of Yellow Fever. By JOSEPH JONES, M.D. Louisville, 1873.

Some Conclusions in regard to General Paresis, with the Report of a Case under Observation. By HORATIO R. BIGELOW, Boston, Mass.

The Therapeutic Effects and Uses of Mercury as influenced by "the Report of the Edinburgh Committee on the action of Mercury, Podophyllin, and Taraxacum on the

Biliary Secretion." By WM. H. DOUGHTY, M.D., Prof. of Mat. Med. and Therap. in Med. Coll. of Georgia, Augusta. Atlanta, 1873.

Law and Intelligence in Nature; and the Improvement of the Race in Accordance with Law. By A. B. PALMER, M.D., Ann Arbor, Mich. Lansing, 1873.

Clinical Notes on Nervous Diseases of Women. By WM. B. NEETEL, M.D. New York, 1873.

Gastrotoomy for Intestinal Occlusion. By SAMUEL WHITALL, M.D. New York, 1873.

The Effects of High Atmospheric Pressure, including the Caisson Disease. By ANDREW H. SMITH, M.D., Surgeon to the N. Y. Bridge Co. Brooklyn, 1873.

On the Etiology of Hereditary Syphilis. By FREDERICK R. STURGIS, M.D., Clin. Assist. Manhattan Eye and Ear Hosp., New York. New York, 1873.

Epidemic or Malignant Cholera. By ALFRED STILLE, M.D., Prof. of Theory and Prac. of Med. in Univ. of Penna. Philadelphia: J. B. Lippincott & Co., 1873.

An Account of the Cholera, as it appeared at Nashville, in 1873. By W. K. BOWLING, M.D. Nashville, 1873.

The Physiology and Psychology of the Brain. By HORATIO R. BIGELOW, Esq., of Boston, Mass.

The Treatment of Typhoid Fever. By JOS. F. MONTGOMERY, M.D., of Sacramento, Cal.

Report on Caseous Pneumonia in its Relationship to Tuberculosis. By Prof. A. T. KEYS, M.D., of Cincinnati. Dayton, 1873.

Coccyodynia. By EDWARD W. JENKS, M.D. Lansing, 1873.

Transactions of the Medical Society of the State of West Virginia. Wheeling, 1873.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. April, 1873. Baltimore, 1873.

Transactions of the Medical Society of the State of California, 1872 and 1873.

Transactions of the Kentucky State Medical Society, 1873. Louisville, 1873.

Report of the Columbia Hospital for Women and Lying-in Asylum. Washington, D. C. By J. HARRY THOMPSON, A.M., M.D., Surgeon-in-Chief. With an Appendix. Washington: Government Printing-Office, 1873.

Wills Ophthalmic Hospital, Philadelphia. Report for 1873.

Report of the State Lunatic Asylum, Utica, N. Y., for 1872. Albany, 1873.

Report of the Retreat for the Insane, at Hartford, Conn., April, 1873.

Report of the Board of Health of the City and Port of Philadelphia, 1872.

Report of the Municipal Hospital (comprising Statistics of 2377 Cases of Small-pox). By WM. M. WELCH, M.D., Physician-in-charge. Philadelphia, 1873.

Report of the Board of Health of the City of St. Louis. St. Louis, 1873.

Statistics of the State of Michigan, collected for the Census of the U. S., June, 1870. Lansing, 1873.

The following Journals have been received in exchange:—

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OF THE MEDICAL SCIENCES
FOR OCTOBER 1873.

ART. I.—*Cerebro-spinal Fever, with Facts and Statistics of the recent Epidemic in New York City.* By J. LEWIS SMITH, M.D., Physician to Infant's Hospital, Randall's Island; Consulting Physician to New York Infant Asylum; Consulting Physician to the Class of Children's Diseases, Bureau for the Relief of the Outdoor Poor, Bellevue. (With a wood-cut.)

CEREBRO-SPINAL fever, designated also spotted fever, tetanoid fever, and cerebro-spinal meningitis, is an epidemic constitutional disease, manifesting itself by lesions and symptoms which pertain chiefly to the nervous system. Descriptions of occasional epidemics, which appear to have been of this malady, have been left us by writers as far back as the 15th century, but it was not clearly discriminated from typhus on the one hand, and local inflammatory affections of the cerebro-spinal axis on the other, till after the present century commenced. Since 1805, when Vieusseux wrote upon it, styling it a new and unusual affection which neither he nor his colleagues had seen, numerous epidemics presenting great sameness of character, have been observed in Europe, Northern Africa, and North America. These have been minutely described by various writers, among whom in Europe, as especially deserving of notice, may be mentioned Dr. Sanderson, of London, and Prof. Hirsch, of Germany.

In this country epidemics of cerebro-spinal fever were fully described by various observers in the first quarter of the present century. The papers relating to them, from the pens of North and Strong in 1811, Gallop in 1815, and Miner in 1825, compare favorably with any similar productions during the same period in Europe. Since this time several excellent monographs relating to cerebro-spinal fever have appeared in this country, and the medical journals contain numerous reports of cases.

So much has, indeed, been written on this disease during the last two decades, that it may seem an unneeded and superfluous work to add anything to the literature of the subject. But when we recollect that some of the best monographs which we possess relating to it, were written by those who have seen but few cases, and some of whom, like Sanderson, travelled to a distance to observe them, we physicians of this country, now that we have had an ample opportunity to observe cases at home in a wide-spread epidemic, with those recent aids in the study of diseases, namely, the thermometer and ophthalmoscope, ought certainly to make known our observations to the profession. Moreover few diseases more urgently demand elucidation than this, for while it is very fatal, there is a discrepancy in the views of physicians in regard to its causes, nature and proper treatment. As cerebro-spinal fever results from some pervading cause, probably as we will see atmospheric, we would expect to observe effects of this cause, in some other way, in addition to the disease of which we are treating. Accordingly, the histories of at least a portion of the epidemics of cerebro-spinal fever show an unusual prevalence of pneumonias of an ataxic type, and sometimes also of pharyngitis, in addition to the cerebro-spinal disease, and this disease is sometimes complicated by congestion, and less frequently by inflammation of the lungs. The prevalence of typhoid pneumonias during cerebro-spinal fever was long ago observed. Thus, in Bascome's history of epidemics, it is stated that "epidemic encephalitis and malignant pneumonias prevailed in Germany (Webber) in the 16th century." In this country, in the epidemics of cerebro-spinal fever from 1811 to 1815, pharyngeal and pneumonic inflammations were unusually frequent. In more recent epidemics observers have not so often, but have occasionally, recorded the prevalence of pneumonias in connection with cases of the cerebro-spinal disease. Accordingly, Webber, who has examined the histories of the various epidemics, describes in his prize essay a second variety of cerebro-spinal fever, which he designates pneumonic, in which the cerebro-spinal axis is involved but slightly, or not at all, and the brunt of the disease falls upon the respiratory organs. In certain epidemics, according to him, the pneumonic form is common, while in others it is infrequent.

During the time when the recent epidemic in New York City was at its maximum, an unusually large number of cases of pleuro-pneumonia of an asthenic type, and I may add, I think, of pharyngitis, occurred; and while cerebro-spinal fever rarely affected those above the age of fifty years, many of those with pneumonia were old people. According to the statistics of the New York Health Board, there were 1707 deaths from diseases of the respiratory organs, exclusive of phthisis, during the four months from February 1st to June 1st, 1872, when the epidemic of cerebro-spinal fever was at its height, while during the remaining eight months of the year there were only 1336 deaths from the same diseases; and I need not add

that deaths from affections of the respiratory apparatus are largely from pneumonia. Moreover, I am of opinion, from my own observations, that many of the cases of pneumonia, during that period, presented symptoms of greater gravity than usually accompany this form of inflammation of the same extent. The patients were greatly prostrated from the first, and in some of them febrile movement, muscular pains, restlessness, or delirium preceded for hours or even days the pneumonic symptoms, affording evidence that the lung disease, if not due entirely to the same atmospheric conditions which give rise to cerebro-spinal fever, was at least under their influence. Although it is probable that pneumonia occurring during an epidemic of cerebro-spinal fever is in most instances a strictly local malady, as it is at ordinary times, more or less modified perhaps by the epidemic influence, there can be little doubt that Webber's view is correct, that there are occasional cases of true cerebro-spinal fever, in which the local manifestations are chiefly in the lungs; cases in which the cerebro-spinal affection is of less importance apparently than the pulmonic. The following case which occurred in my practice is an example.

Mrs. L., aged about 25 years, suckling her infant, and of rather delicate health, was seized on June 8th with pain in the head and right subaxillary region. In two or three hours the pain of the thorax ceased, but that in the head continued and was very severe. On the 9th there was little change in the symptoms, the patient complaining only of the violent frontal headache. At my first visit, which was on the 10th, Mrs. L. stated that objects were indistinct, but the appearance of the eyes was normal; pulse 118, temp. 105° ; evening, pulse 104, temp. 102° . The patient moaned, and obtained little or no sleep in consequence of the severity of the headache. Treatment, potass. bromid. gr. xxv, every three or four hours, ice to head, sinapism to nucha. On the 11th she seemed better; there was a remission of the symptoms, and for two hours she was entirely free from headache. The remission was succeeded by a chill, followed by severe pain in the head, in the right mammary or subaxillary region, and in the right shoulder.

12th. Symptoms the same, pulse 112.

13th. The pain in the head has ceased, but that in the right side of the chest is more severe, and respiration is accompanied by a moan; resp. 32, pulse 116, temp. 105° . There is rigidity of the muscles of the nucha, so that it is impossible to bring forward the head upon the chest. Attempts to do it are painful, and the shoulders move with the head. There are general hyperæsthesia and well-marked physical signs of pleuro-pneumonia of the right lower lobe. *Diagnosis:* cerebro-spinal fever, with spinal meningitis and pleuro-pneumonia.

14th. Has no pain except that of the chest; pulse 114, temp. 105° ; evening, pulse 132.

15th. Pulse 136; resp. 48, with an expiratory moan; temp. $104\frac{1}{2}^{\circ}$; muscles of the nucha still contracted, preventing anterior movement of the head; still has general hyperæsthesia, but no headache; tongue moderately furred and rather dry; appearance of eyes normal; has had no vomiting; little or no delirium, and no cutaneous eruption. Treatment, quiniæ sulph. gr. iv, every four hours, alternately with gr. xxv of bromide of potassium; nutritious diet and alcoholic stimulants.

16th. Pulse 128; resp. 52; temp. $104\frac{3}{4}^{\circ}$; entire lower lobe of right lung is solidified; evening, pulse 140, feeble. Death occurred June 17th.

In this case the violent headache, dimness of sight, marked stiffness of the muscles of the nucha, and the hyperæsthesia indicated cerebro-spinal fever as the disease, and yet the cerebral symptoms abated in a few days, and the prominent local symptoms in the last of the sickness were due chiefly to the pneumonia. In another case, which was visited by three prominent physicians of this city, who agreed in the diagnosis of cerebro-spinal fever, pneumonia of the right lung was suddenly developed at about the sixth or seventh day. The chief symptoms subsequently were referable to the pneumonia, and when this abated the patient recovered.

Cause.—Does it emanate from the soil? The following facts demonstrate that it does not, to wit: most of the epidemics commence in winter when the ground is frozen; the disease occurs in valleys and on hilltops, and upon all varieties of soil; it invades one district, passes over another adjoining, and affects, perhaps, a third beyond, although the geological formation of all is the same.

Does the cause exist in the diet, as some competent observers have supposed? The following facts, I believe, are sufficient to justify a negative answer: Of two adjacent localities, in which the nature of the diet of the inhabitants is the same, one escapes and the other is visited by the epidemic; an epidemic sometimes prevails here and there over an area of many thousand miles, as recently in North America. It is hardly reasonable to suppose that any deleterious property would occur in the food over so wide a territory. An epidemic ceases, although the food of the people continues the same. Infants at the breast, having only the mother's milk, are sometimes affected, and likewise certain animals, whose food is very different from that of man, and finally the most careful examinations have hitherto failed to discover any change in the cereals, or other food, or noxious principle sufficient to explain the occurrence of the disease over a wide extent of territory.

There can, therefore, be little doubt that the cause exists in the atmosphere, though so subtle that we may never be able to detect it. Cerebro-spinal fever is indeed one of many examples in corroboration of the statement made by Humboldt, that there is no subject of scientific inquiry more obscure than the laws which control epidemics. Among the meteorological conditions which favor the occurrence of this disease, cool weather has already been alluded to. Statistics collected in France and the United States show that, while 166 epidemics occurred in the six months commencing with December, only 50 occurred in the remaining six months of the year. According to Prof. Hirsch, whose statistics were obtained largely from Central Europe, there were 57 epidemics in winter or winter and spring, 11 in spring, 5 between spring and autumn, 4 commencing in

autumn and extending into winter or winter and spring, and 6 lasting through the entire year.

All observers have remarked the fact that anti-hygienic conditions, though obviously subordinate to the unknown atmospheric cause, nevertheless strongly predispose to this disease. Hence, soldiers in barracks and the poor in tenement houses suffer most severely. During the recent epidemic in New York, unusually severe or multiple cases occurred for the most part where there were obvious anti-hygienic conditions, as in apartments which were unusually crowded and filthy or in tenements around which refuse had collected or which had defective drainage. The interesting chart, prepared under the direction of Dr. Moreau Morris for the Health Board, shows that comparatively few cases occurred in those portions of the city where the sanitary conditions were good. I can not, however, agree with Prof. Hirsch that the greater crowding, domiciliary and personal uncleanness, and imperfect ventilation in the cool than in the warm months, explain the fact that epidemics occur chiefly in winter and early spring; for in clean and well-ventilated apartments in sparsely settled and salubrious localities, epidemics occur for the most part in these seasons. Anti-hygienic conditions probably predispose to this disease in the same way and no more than to any other grave epidemic which happens to be prevailing, as for example to Asiatic cholera, whose ravages are largely in the crowded and uncleanly quarters of the poor.

Is cerebro-spinal fever propagated by contagion?—It is the almost unanimous opinion of those who are most competent to judge from their observations, that it is either not contagious or is so only in a very slight degree. It is certain that the vast majority of cases occur without the possibility of personal communication. Thus, in the commencement of an epidemic, the first patients are affected here and there at a distance from each other, often miles apart, and throughout an epidemic usually only one is seized in a family. Children may be around the bedside of the patient, passing in and out of the room without restriction, and yet we can confidently predict that none of them will contract the disease if there are proper ventilation and cleanliness. And when two or more cases occur in a family, it commences at such irregular intervals in the different patients that the presumption is strong that they receive it from the same extraneous source, and not one from the other, for contagious diseases usually have a pretty uniform incubative period. Thus, in the Brown family treated by Dr. Sewall (*N. Y. Med. Record*, July 1, 1872), the first child sickened January 30th, and the remaining five children at intervals respectively of 5, 7, 11, 25, and 45 days. The following have been my observations relating to this point:—

Single cases, No. 39 (4 adults).

Two in a family, No. 16 (8 families).

Three in a family, No. 3 (1 family).

In most of the 39 families in which single cases occurred, there were children who were allowed free intercourse with the patients. Is there any other malady of childhood known to be infectious, which affords such a record of non-contagion? In those instances in which two in a family took the fever, those who were last attacked did not seem to receive it from those who were first affected, for the reason already stated, namely the very variable intervals between the two cases in the different families. The facts in the family in which three cases occurred, did seem to lend support to the doctrine of contagion. A boy twelve years of age died of cerebro-spinal fever, and was buried on Saturday or Sunday. On the following Monday the mother washed the linen of the boy, which had accumulated, and within two days was herself affected with the disease. She and her infant, who was also seized with it, died. Were such cases frequent or not infrequent, the argument in favor of contagion would certainly be strong; but as they are infrequent it is proper to accept any other reasonable explanation instead. The state of the bedding and apartments, as observed by me, was such as to render the atmosphere in which this family lived noxious in a high degree, and therefore such as to attract the prevailing epidemic. Moreover, the mother, exhausted by her long watching, and deprived of needed sleep (for the boy was several days sick), instead of obtaining the required rest, rendered her system more liable to the fever by her self-imposed duties on the day following the burial. These manifest anti-hygienic conditions appeared quite sufficient, without the aid of any contagious principle, to explain the occurrence of the cases in this severely visited family. My statistics, therefore, harmonize with the doctrine of non-contagiousness, but it is obviously very difficult to determine from clinical experience whether an epidemic constitutional disease is absolutely non-contagious, or contagious in a very low degree. Cerebro-spinal fever is one or the other, but if contagious it is apparently less so than either typhoid fever or Asiatic cholera.

Allusion has been made to the fact that this malady sometimes occurs among the lower animals. In the epidemic of 1811 in Vermont, Dr. Gallop remarks that even the foxes seemed to be affected, so that they were killed in numbers near the dwellings of the inhabitants. The recent epidemic in New York, it is well known, prevailed among horses several months before it occurred among the people. It was common and fatal in the large stables of the city car and stage lines in 1871, while among the people the epidemic did not properly commence, although there were previously isolated cases, till January, 1872. It has been asked, whether in epidemics like this, in which the lower animals are first affected, the disease may not be communicated from them to man? This obviously brings up the question of contagiousness. From my own observations I should certainly answer in the negative, for I have not been able to ascertain that those who had charge of the affected horses in the recent

epidemic, as the veterinary surgeons or stablemen, were any more liable to the fever than others, who were not so exposed. They apparently were not, and we must, therefore, believe that this disease is not propagated from one species of animals to another, certainly no more than from one animal to another in the same species, and the fact that different animals are affected by the epidemic is due to the potent and pervading nature of the cause. Cerebro-spinal fever is indeed, so to speak, pandemic in a double sense; on the one hand affecting both sexes, different ages, and all conditions of people over a wide extent of territory, and on the other hand different species of animals, but with little or no contagiousness.

Not infrequently we are able to discover some exciting cause of the fever, usually an exhausting or perturbing influence of some sort. An individual, whose system is affected by the epidemic influence, and is therefore predisposed to the disease, may, perhaps, escape by a quiet and regular mode of life; but if there is an exciting cause of the nature alluded to, the fever may be developed. Among these exciting causes may be mentioned overwork, fatigue, mental excitement, prolonged abstinence from food, followed by over-eating, and the use of indigestible and improper food. Thus, in one instance in my practice, a delicate young woman at the head of one of the departments in a well-known Broadway store, was anxious and excited and her energies overtaxed at the annual re-opening. Within a day or two subsequently the disease commenced. Another patient, a boy, was seized after a day of unusual excitement and exposure, having in the mean time bathed in the Hudson when the weather was quite cool. During the recent epidemic in New York those children seemed to me especially liable to be attacked who were subjected to the severe discipline of the public schools, returning home fatigued and hungry, and eating heartily at a late hour. In one instance which I observed, a school-girl of 10 years returned from school excited and crying, because she had failed in her examination and was not promoted. In the evening, after she had closely studied her lessons, the fever commenced with violent headache. Dr. Frothingham (*Am. Med. Times*, April 30, 1864) writes as follows of the brigade in which cerebro-spinal fever occurred in the Army of the Potomac: "Under Gen. Butterfield, a stern disciplinarian, * * the men were drilled to the full extent of their powers—often to exhaustion. I did not at the time recognize this as a cause of the disease in question, but I learn that in the present epidemic in Pennsylvania the attack generally follows unusual exertion and exposure to cold." Observers have long recognized the fact of such exciting causes. Dr. Gallop, in his history of the epidemic in Vermont in 1811, directs attention to the severity of the disease among the troops under General Dearborn, who were fatigued by marches, and greatly dispirited by a repulse which they had sustained from the British.

Sex.—It is stated by writers that more males are affected than females.

Hospital and military statistics show this; but in family practice, in which a large proportion of the patients are children, the number of males and females is about equal. Thus in 75 cases occurring in the 20th and 22d wards, mainly in the practice of two other physicians and myself, I find that there were 39 males and 36 females. Sixty-four of these were children. From January 1st to November 1st, 1872, 905 cases in which the sex was stated were reported to the Health Board. Of these 484 were males, and 421 females. Dr. Sanderson's statistics of the epidemic in the provinces around the Vistula, the cases being chiefly children, give also but a slight excess of males. Probably, therefore, the sex under the age of puberty makes no difference in the liability to this disease, and the same may be said of all other constitutional affections. Men are more liable than women, only when they lead a more irregular life, and are subject to more privations and exposures.

Age.—Children, as already stated, are much more liable to cerebro-spinal fever than adults. The following are the statistics of the Health Board relating to this point, the cases occurring in 1872:—

Under 1 year	125
From 1 to 5 years	336
“ 5 “ 10 “	204
“ 10 “ 15 “	106
“ 15 “ 20 “	54
“ 20 “ 30 “	79
Over 30 years	71
Total	975

In the statistics which I have obtained of 81 cases occurring in the 20th and 22d wards, the ages were as follows:—

Under 1 year	8
From 1 to 3 years	18
“ 3 “ 5 “	20
“ 5 “ 10 “	17
“ 10 “ 15 “	7
Over 14 years	11
Total	81

It is seen that nearly three-fourths of the whole number of cases in the recent epidemic in New York City were under the age of ten years. The statistics of other epidemics occurring in civil practice is similar. Thus Dr. Sanderson, in examining the mortuary statistics of the epidemic in Germany, ascertained that there had been 218 deaths under the age of fourteen years, and only 17 above that age, and although this does not show the exact ratio of children to adults, in the entire number of cases it is apparent that children greatly preponderated.

The more advanced the age after childhood, the less the liability to this disease; so that after the middle period of life few cases occur, and after the age of fifty years there is nearly an immunity. The oldest two, of

whose cases I have the record in the recent epidemic, had attained the ages respectively of 47 and 63 years.

Symptoms.—During epidemics of cerebro-spinal fever, we are now and then called to patients who present certain of the characteristic symptoms, but in so transient and mild a form that they are soon restored to health. The fever is said to have aborted. I have met the following cases :—

A boy of eight years, previously well, was taken with headache, vomiting, and moderate febrile movement on April 2d, 1872. The evacuations were regular, and no local cause of the attack could be discovered. On the following day the symptoms continued, except the vomiting, but he seemed somewhat better. On April 4th the febrile movement was more pronounced, and in the afternoon he was drowsy and had a slight convulsion. The forward movement of his head was apparently somewhat restrained. On the 6th the symptoms had begun to abate, and in about one week from the commencement of the attack his health was fully restored.

A boy six years old was well till the second week in May, 1872, when he became feverish, and complained of headache. At my first visit, May 14th, he still had headache, with a pulse of 112. The pupils were sensitive to light, but the right pupil was larger than the left. The bromide and iodide of potassium were prescribed, with moderate counter-irritation behind the ears. The headache and febrile movement in a few days abated, the equality of the pupils was restored, and within a little more than a week from the first symptoms he fully recovered.

Obviously the diagnosis, when symptoms are so mild, must sometimes be doubtful; but as observers in different epidemics report such cases, it seems proper to regard them with perhaps occasional exceptions as genuine, but aborted cases. The epidemic influence acts so feebly on these patients, or their ability to resist it is so great, that they escape with a short and trivial ailment.

Occasionally, also, during the progress of an epidemic, we meet patients who present more or fewer of the characteristic symptoms, but in so mild a form that they are never seriously sick, and never entirely lose the appetite, but the disease, instead of aborting, continues about the usual time.

Thus, on the 4th of January, 1873, I was called to a girl of thirteen years, who had been seized with vomiting followed by headache in the last week in December. During a period of six to eight weeks, or till nearly the first of March, she presented the following symptoms: daily paroxysmal headache, often most severe in the forenoon, neuralgic pain in the left hypochondrium, and sometimes in the epigastric region; pulse and temperature sometimes nearly normal, and at other times accelerated and elevated, both with daily variations; inequality of the pupils, the right being larger than the left during a portion of the sickness. This patient was never so ill as to keep the bed, usually sitting quietly during the day in a chair, or reclining on a lounge, and she never fully lost her appetite. Quinia had no appreciable effect on the paroxysms of pain or fever.

There can, in my opinion, be little doubt that this girl was affected by the epidemic, but so mildly that there was, for a considerable time, much

uncertainty in the diagnosis. Cases like this, in which the disease is so feebly developed, and those in which it aborts, though they deserve recognition, evidently should not be employed in the statistics.

Mode of Commencement.—In all the cases which I have observed, cerebro-spinal fever commenced between 12 M. and 6 A.M., and in the records of cases published by others the time of commencement, so far as I have observed, was between the same hours. The fact that this disease does not commence after the repose of night till several hours of the day have passed, shows the propriety, as we shall see hereafter, of enjoining a quiet and regular mode of life, free from excitement, and with sufficient hours of sleep during the time that the epidemic is prevailing.

Cerebro-spinal fever usually has no premonitory stage, or it is so slight as to escape notice. Exceptionally there are certain premonitions for a few hours or days, such as languor, chilliness, etc. Premonitions occur more frequently in mild than in severe forms of the fever. The ordinary mode of commencement in a typical or somewhat severe case is as follows: The patient has a rigor or chill, or rarely two or three of them at irregular intervals of some hours. One patient, an adult female, had three or four pretty severe chills, the last occurring, from recollection, as late as the fourth day. Children often have clonic convulsions in place of the chill, or immediately after it, partial or general, slight or severe. Apathy, more or less profound stupor, or less frequently delirium succeeds. In the gravest cases semi-coma occurs, from which the patient is with difficulty aroused, or profound coma, which, in spite of prompt and appropriate treatment, may prove speedily fatal. If aroused to consciousness, he now complains of violent headache, with or without, or alternating with equally, severe neuralgic pains in the neck, some part of the trunk, or in one of the extremities. The pupils are dilated, or less frequently contracted, and they respond feebly, or not at all, to light. Often they oscillate, and occasionally one is larger than the other.

Vomiting, with little apparent nausea, is also an early and prominent symptom, evidently having a cerebral origin. It occurred as an initial symptom in 51 of 56 cases observed by Dr. Sanderson. Of 61 cases observed by Dr. Sewall and myself, neither its presence nor absence was recorded in 13 cases, its absence in only 1, and its presence as an early symptom in 48 cases.

Unlike typhus and typhoid fevers the temperature is usually as elevated, and sometimes more so, on the first day than subsequently. Indeed, the highest temperature which I have observed in any case, was only two or three hours after the commencement of the attack in a child of three years, namely a temperature of $107\frac{2}{3}^{\circ}$.

Exceptionally the initial symptoms occur in a more gradual manner, becoming by degrees more severe, so that a few days elapse before they are so pronounced that a clear diagnosis is possible. The febrile movement,

headache, neuralgic pains, lassitude, vomiting, and fretfulness, though pretty uniformly present in the commencement, are not in these cases so severe at this period as to excite any apprehension.

Symptoms Pertaining to the Nervous System.—Pain, already described as an initial symptom, continues during the acute period of the malady. It is ordinarily severe, eliciting moans from the sufferer, but its intensity varies in different patients. Its most frequent seat is the head, where it may be frontal, or occipital. It is described as sharp, lancinating, or boring. It is also common in the neck, especially the nucha, the epigastrium, umbilical and lumbar regions, in one or more of the limbs, and along the spine (rachialgia). It shifts from place to place, but it is commonly more persistent in the head and along the spine than elsewhere. The patient, if old enough to speak, and not delirious or too stupid, often exclaims, Oh my head! from the intensity of his suffering, but after some moments complains equally of pain in some other part, while perhaps the headache has ceased, or is milder. In a few instances the headache is absent, or is slight and transient, while the pain is intense elsewhere. After some days the pains begin to abate, and by the close of the second week they are much less pronounced than previously. Vertigo occurs with the headache, so that the patient reels in attempting to stand or walk. Contributing to the unsteadiness of the muscular movements is a notable loss of strength, which occurs early and increases.

The state of the patient's mind is interesting. It is well expressed in ordinary cases by the term apathy or indifference, and between this and coma on the one hand, and acute delirium on the other, there is every gradation of mental disturbance. Sometimes patients seem totally unconscious of the words or presence of those around them, when it appears subsequently that they understood what was said or done. Delirium is not infrequent, especially in the older children and adults. Its form is various, most frequently quiet or passive, but occasionally maniacal, so that forcible restraint is required. It sometimes resembles intoxication, or hysteria, or it may appear as a simple delusion in regard to certain subjects. Thus one of my patients, a boy of five years, appeared for the most part rational, protruding his tongue when requested, and ordinarily answering questions correctly, but he constantly mistook his mother, who was always at his bedside, for another person. Severe active delirium is commonly preceded by intense headache. In favourable cases the delirium is usually short, but in the unfavourable it is apt to continue with little abatement till coma supervenes.

On account of the pain and disordered state of mind, patients seldom remain quiet in bed, unless they are comatose, or the disease is mild, or so far advanced that muscular movements are difficult from weakness. In severe cases they are ordinarily quiet a few moments as if slumbering, and then aroused by the pain roll or toss from one part of the bed to another.

One of my patients, a boy of five years, repeatedly made the entire circuit of the bed during the spells of restlessness. In mild cases patients lie quiet, usually with their eyes closed, except when disturbed.

All writers record a general hyperæsthesia of the skin. Few patients that are not in a state of profound coma are free from it during the first weeks, and it increases materially the suffering. Frictions upon the surface, and even slight pressure with the fingers upon certain parts, extort cries. Gently separating the eyelids for the purpose of inspecting the eyes, and moving the limbs, or changing the position of the head, evidently increase the suffering, and are resisted. I have sometimes observed such outcries from slowly introducing the thermometer into the rectum, that I was forced to believe that the anal, and perhaps rectal, surface was also hyper-sensitive. The hyperæsthesia has diagnostic value, for there is no disease with which cerebro-spinal fever is likely to be confounded in which it is so great. It is due to the spinal meningitis, and is appreciable even in a state of semi-coma.

Tonic contraction of certain muscles, or groups of muscles, is present in all typical cases. In a small proportion of patients it is absent, or is

not a prominent symptom, namely, in those in whom the encephalon is mainly involved, the spinal cord and meninges being but slightly affected, or not at all. This contraction is most frequent and marked in the muscles of the nucha, causing retraction of the head, but it is also common in the posterior muscles of the trunk, producing opisthotonos, and in less degree in those of the abdomen and lower extremities, and hence the flexed position of the thighs and legs, in which patients obtain most relief. The muscular contraction is not an initial symptom. I have ordinarily first observed it about the close of the second day, but sometimes as early as the close of the first day, and in other instances not till the close of the third day. Attempts to overcome the rigidity, as by bringing forward the head, are very painful, and cause the patient to resist. In young children having a mild form of the fever with little retraction of the head, the



rigidity is sometimes not easily detected. I have been able in these cases to satisfy myself and the friends of its presence, by observing the difficulty with which the head is brought forward on presenting to the patient a tumbler with cold water, which is craved on account of the thirst. The usual position of the patient in bed is with the head thrown back, the thighs and legs flexed, with or without forward arching of the spine (see figure). The muscular contraction continues from three to five weeks, more or less, and abates gradually; occasionally it continues much longer. Through the kindness of Dr. Griswold, of 30th Street, I was allowed to see an infant of seven months in the tenth week of the disease. It exhibited great fretfulness, decided prominence of the anterior fontanelle, probably from intra-cranial serous effusion, and marked rigidity of the muscles of the nucha with retraction of the head.

Paralysis occasionally occurs, but is less frequent than we would be led to expect from the nature of the lesions. It may occur early, but it is more frequently a late symptom. It may be limited to one or two of the limbs, as a leg, or arm and leg, or it may be more general. Thus a man treated by Dr. Law in the Dublin epidemic of 1865 could move neither arms nor legs, and Wunderlich saw a patient who had paralysis of both lower extremities and a considerable part of the trunk. As the paralysis is due to inflammatory processes in the cerebro-spinal axis, it usually disappears in a few weeks as the inflammation abates, and convalescence is established, but it may be more protracted. Thus in Wunderlich's case there was only partial recovery after the lapse of five months.

Digestive System.—The tongue is ordinarily lightly covered with a whitish fur. Occasionally in cases attended with great prostration the fur is dry and brown, but only for a few days, when the moist whitish fur succeeds. The habitual brownish and dry fur on the tongue, and sordes upon the teeth, so common in typhus and typhoid fevers, are seldom observed in uncomplicated cases of this disease. Vomiting, which I have described as an initial symptom, usually ceases in a few hours, or not till the lapse of several days, and it frequently recurs at intervals during the periods of recrudescence, which are common in the progress of the fever. It occurs with little effort, often like a regurgitation, as is common when this symptom has a cerebral origin. The ejecta consist at first of the contents of the stomach, and afterwards partly of bile. It does not differ as a symptom from the vomiting which is so common in sporadic meningitis, having a similar origin in a sensation of faintness or depression referred to the epigastrium.

The appetite is poor or entirely lost during the active period of the malady, and it is not fully restored till convalescence is well advanced. On account of the imperfect nutrition, patients progressively waste, and when the case is protracted there is always notable emaciation. Thirst, already alluded to, and more or less constipation are common, but the latter readily

yields to purgatives. On the other hand diarrhœa sometimes precedes and accompanies the disease. I observed this in a few instances in 1872, when the weather had become warm. The patients were young children.

Pulse.—The pulse in children is constantly accelerated. Even in mild cases it is rarely below 100 per minute, and its ordinary range is from 112 to 160. I have seventy-five recorded observations of the pulse in children who recovered, taken before there was any decided improvement. The maximum pulse in these observations was 168 per minute, which was on the first day; the minimum 82, and the average 123. The more severe and dangerous the attack, the greater the frequency of the pulse, unless occasionally in the comatose state. But even in profound coma the pulse was in my observations accelerated, and as death drew near, however great the stupor, it was progressively more frequent and feeble. Intermissions in the pulse do not seem to be as frequent as in sporadic meningitis. The pulse is liable to daily variations in frequency which occur suddenly and without appreciable cause. The following consecutive enumerations of the pulse in four favorable cases which I have selected as typical will give an idea of these variations :—

- 1st case, an infant of 14 months, 168, 120, 108, 120, 140, 150, 136, 128, 120.
- 2d case, an infant of 2 years, 136, 152, 130, 132, 136, 140, 152, 140, 136, 148.
- 3d case, a boy of 6 years, 120, 120, 88, 84, 92, 124, 128, 120.
- 4th case, a girl of 4 years, 116, 100, 124, 116, 120, 136, 140, 128, 128, 104.

I have preserved observations of this symptom made daily in nine fatal cases, and these show similar fluctuations in the frequency of the heart's contractions. The patients were children, all dying comatose. The maximum pulse in these observations was 204, which was on the first day; the minimum 88, and the average 140. The following are the consecutive enumerations of the pulse usually made twice daily in two of these cases. It will be seen that there was not only greater frequency of the pulse, but fluctuations from day to day similar to those in the favorable cases :—

- 1st case, age 8 months, 204, 164, 116, 160, 164.
- 2d case, age 2 years 8 months, 192, 168, 200, 152, 160.

In most inflammatory and febrile diseases exacerbations commonly occur in the latter part of the day, but in this disease they do not seem to be influenced by the time of day, so that sometimes the temperature is highest and pulse most frequent in the morning, sometimes in the evening, and then again at midday.

In favorable adult cases the pulse often remains under 100, and in certain patients it scarcely has more than the normal frequency, but if the type is severe it rises to 110, 120, or over. In the adult, as in the child, as death approaches, the pulse becomes more and more frequent and feeble, and it seldom even in the most asthenic cases has the fulness and force observed in idiopathic inflammations.

Temperature.—Certain of the older observers before the day of clinical

thermometry asserted that the temperature is not increased. North remarked as follows: "Cases occur, it is true, in which the temperature is increased above the normal standard, but these are rare," and Foot and Gallop made similar statements. I am surprised also that some of the recent writers state that febrile movement is often absent. Thus, in a well-written American treatise bearing the date 1873, it is stated "that febrile symptoms do not necessarily belong to epidemic cerebro-spinal meningitis as a substantive disease, for it may and not unfrequently does occur without exhibiting any such symptoms." (Lidell.)

I have no doubt from the nature of cerebro-spinal fever, and from thermometric examinations, which I have made now in more than fifty cases, that there is always an elevation of the internal temperature above the normal standard during the active period of the disease. I have never observed a temperature of less than $99\frac{1}{2}^{\circ}$ if the examination were made within the first fourteen days, and the reason that certain other observers state differently is probably because they have taken the temperature of the cutaneous surface, which is very fluctuating and is often much below that of the blood. The temperature should be ascertained *per rectum*, where it corresponds pretty nearly with that of the blood. In one instance I supposed that I had met a case in which the temperature was not elevated, and I cite it as showing the liability to error in the thermometric examinations of these cases: A female patient, forty-seven years old, three days' sick and comatose, whom I was allowed to examine with the family physician, exhibited no elevation of temperature when the instrument was placed in the mouth and in the axilla, but on introducing it into the rectum it rose to $99\frac{1}{2}^{\circ}$.

The internal temperature, although uniformly elevated, undergoes greater and more sudden variations than occur in any other febrile or inflammatory disease. These fluctuations, which correspond with similar changes in the pulse, are observed during the different hours of the same day. I have in the statistics of my practice 146 observations of the temperature in 35 patients taken before the close of the second week. The highest I have already stated in speaking of the mode of commencement, namely $107\frac{2}{5}^{\circ}$ in a child of two years. It fell a little subsequently, but rose again on the third day to 107° , when she died. In two other cases the temperature was 106° on the first day, and it did not afterwards reach so high an elevation. One of these died on the ninth day, and the other in the ninth week. The next highest temperature was $105\frac{4}{5}^{\circ}$, also on the first day in an infant of eight months, who died on the ninth day. The first and last of these cases occurred in the same wooden tenement-house in the suburbs of the city and upon an elevated outcropping of rock. Wunderlich has recorded a temperature of 110° in one or two cases, but so great an elevation must be very rare in this disease, and is of course prognostic of an unfavourable ending.

The external temperature undergoes similar but greater fluctuations, rising above and falling below the normal standard several times in the course of the same day. Similar fluctuations occur in sporadic meningitis, but they are much less pronounced. The more grave the case in those not comatose, the greater these variations. The following is a common example: the patient was two years old, and the case was one of considerable severity. The observations were made at four consecutive visits during the first week. The internal temperature varied from $101\frac{1}{2}^{\circ}$ to $104\frac{4}{5}^{\circ}$ as the extremes, while that of the fingers and hand at the first examination was $90\frac{1}{2}^{\circ}$, at the second 90° , at the third 103° , and at the fourth 83° . Thus the temperature of the extremities at the first and second examinations was about 8° below that of health, while at the third examination it had risen 13° , so as nearly to equal the internal temperature, and at the fourth examination it had again fallen 20° , or $15\frac{1}{2}^{\circ}$ below the normal standard. The patient recovered. These sudden and great variations in the pulse and temperature have considerable diagnostic value in obscure and doubtful cases.

Respiratory System.—The symptoms which are referrible to the respiratory apparatus are for the most part quite subordinate except when an inflammatory complication occurs. The respiration in uncomplicated cases is quiet and easy, and a cough if present is usually slight and accidental. Intermittent, sighing, or irregular respiration is less frequent in cerebro-spinal fever than in sporadic meningitis, but it does occur. In ordinary cases the respiration is somewhat accelerated, but without any marked disturbance in its rhythm. In 31 observations in children who had the disease without complication, I found the average respirations 42 per minute, while the average pulse was 137. It is seen therefore that the respiration as compared with the pulse was proportionately more frequent than in health. This appears to be due to the fact, that certain muscles, which are concerned in respiration, as the abdominal and perhaps others, are embarrassed in their movements by the tonic contractions. In cases of pulmonary congestion, œdema, or inflammation, of course, the symptoms of this affection are superadded to those of the primary disease.

Cutaneous Surface.—The features may be pallid, of normal appearance, or flushed in the first days of the disease; but in advanced cases they are pallid, as is the skin generally. A circumscribed patch of deep congestion often appears, as in sporadic meningitis, upon some parts of them, as the cheek, forehead, and ear, and after a short time disappears. Friction for a moment upon any part of the surface, when the temperature is not reduced, produces the same appearance, a fact to which Trousseau and others have called attention as regards sporadic meningitis.

The following are the abnormal appearances of the skin which I have most frequently observed: 1st, Papilliform elevations, due to contraction of the muscular fibres of the corium, namely the so-called goose-skin. This

is not uncommon in the first weeks. 2d, A dusky mottling, also common in the first and second weeks, in grave cases, and most marked where the temperature is reduced. 3d, Numerous minute red points over a large part of the surface, bluish spots a few lines in diameter due to extravasation of blood under the cuticle, resembling bruises in appearance, and large patches of the same color, an inch or more in diameter, less common than the others, and usually not more than two or three upon a patient. These last I believe from certain observations are sometimes the result of bruises, which the patients receive during the spells of restlessness. 4th, Herpes. This is common. It sometimes occurs as early as the second or third day, but in other instances not till towards the close of the first week or in the second. The number of herpetic eruptions varies from six or eight to a dozen or more. This affection evidently has a neuropathic origin, the vesicles occurring chiefly on those parts of the surface which are supplied by branches of the fifth pair of nerves. Its most common seat is upon the lips, but I have occasionally observed it upon the mucous membrane of the nasal and buccal surfaces, upon the cheek, around the ears and upon the scalp.

During the first days the skin is apt to be dry. Afterwards perspirations are not unusual, and free perspirations sometimes occur especially about the head, face, and neck. The quantity of urine excreted is normal, or it may be in excess of the normal amount. It occasionally contains a moderate amount of albumen, and in exceptional instances cylindrical casts and blood corpuscles. A deposit of urates in the urine is not infrequent, but this so often occurs in inflammatory and febrile diseases, that it is of little moment.

Arthritic inflammation, apparently of a rheumatic character, has been occasionally observed in most epidemics. It is commonly slight, producing merely an œdematous appearance around one or more joints. Thus, in one case, which came under my notice, and which was subsequently fatal, the parents, who were poor, and were therefore without medical advice till the case was somewhat advanced, had already diagnosticated rheumatism on account of puffiness, which they had noticed around one of the wrists.

The organs of the special senses are more or less involved in most cases, and the eye and ear are not infrequently the seat of serious lesions. Taste and smell are rarely affected so far as known, but it is possible that they may sometimes be perverted or even temporarily lost during the time of greatest stupor. In one case at least the smell in one nostril was entirely lost. The affections of the eye and ear are the most important and interesting of those of the special senses. Strabismus is common. It may occur at any period of the fever, continuing a few hours or several days, and it may appear and disappear several times before convalescence is established. Occasionally it continues several weeks, but with few exceptions the parallelism of the eyes is finally restored. In a boy of five

years, whom I last saw three months after convalescence, there was still convergent strabismus of the right eye and double vision.

Changes in the pupils are among the first and most noticeable of the initial symptoms, as I have already stated in describing the mode of commencement. These are dilation, less frequently contraction, oscillation, inequality of size, feeble response to light, etc. Most patients present one or more of these abnormalities of the pupils, and they continue during the first and second weeks, and gradually abate, as the condition of the patient improves. Inflammatory hyperæmia of the conjunctiva often occurs. It commences early, and now and then, the conjunctivitis is so intense, that considerable tumefaction of the lids occurs, with a free muco-purulent secretion. The false diagnosis has indeed been made of purulent ophthalmia, in cases in which this affection of the lids was early and severe. But such intense inflammation is quite exceptional. More frequently, there is an uniform diffused redness of the conjunctiva, not so dusky as in typhus, and the injected vessels can not be so readily distinguished as in that disease.

In certain cases, almost the whole eye (all, indeed, of the important constituents) becomes inflamed; the media grow cloudy, the iris discolored, and the pupils uneven, and filled up with fibrinous exudation. The deep structures of the eye cannot, therefore, be readily explored by the ophthalmoscope, but they are observed to be adherent to each other, and covered by inflammatory exudation. They present a dusky red, or even a dark colour, when the inflammation is recent. Exceptionally, the cornea ulcerates, and the eye bursts, with a loss of more or less of the liquids, and shrinking of the eye. But ordinarily no ulceration occurs, and as the patient convalesces, the œdema of the lids, hyperæmia of the conjunctiva, the cloudiness of the cornea, and of the humours, gradually abate, and the exudation in the pupils is absorbed. The iris bulges forward, and the deep tissues of the eye, viewed through the vitreous humour, which before had a dusky red color from hyperæmia, now present a dull white color. The lens itself, at first transparent, after a while becomes cataractous. Sight is lost, totally and forever. This form of ophthalmia is sometimes rapidly developed, as in the following example:—

On July 5th, 1873, I was called to a boy, five years of age, who had reached the tenth day of cerebro-spinal fever without apparently any affection of the eyes, as both presented the normal appearance. On the following day the left eye was red and swollen from the inflammation and chemosis, so that the lids could not be closed, and the media were cloudy. Death occurred on the same day.

If the patient live, the volume of the eye diminishes, as the inflammation abates to less than the normal size, even when there has been no rupture, and divergent strabismus is apt to occur. Prof. Knapp, whose description of the eye I have for the most part followed, says: "The nature of the eye affection is a purulent choroiditis, probably metastatic." Fortunately

so general and destructive an inflammation of the eye, as has been described above, is comparatively rare. On the other hand, conjunctivitis of greater or less severity, and hyperæmia of the optic disk, consequent on the brain disease, are not unusual, but they subside, leaving the function of the organ unimpaired.

Inflammation of the middle ear of a mild grade, and subsiding without impairment of hearing, is common. The *membrana tympani*, during its continuance, presents a dull yellowish, and in places a reddish, hue. Occasionally a more severe otitis media occurs, ending in suppuration, perforation of the *membrana tympani*, and otorrhœa, which ceases after a variable time. But otitis media is not the most severe affection of the sense of hearing. Certain patients lose their hearing entirely and never regain it, and that too, with little otalgia, otorrhœa, or other local symptoms, by which so grave a result can be prognosticated. This loss of hearing does not occur at the same period of the disease in all cases. Some of those who become deaf are able to hear as they emerge from the stupor of the disease, but lose this function during convalescence, while the majority are observed to be deaf as soon as the stupor abates and full consciousness returns.

Two important facts have been observed in reference to the loss of hearing in these patients, namely, it is bilateral and complete. When first observed it is sometimes complete, but in other instances it is partial, and when partial it gradually increases till after some days or weeks, when it becomes complete. I have the records of ten cases of this loss of hearing, or about one in ten of the total number of cases, which have either come under my observation, or have been reported to me by physicians in whose practice they occurred. One was a young lady and the others children under the age of ten years. Prof. Knapp has examined thirty-one cases. "In all," says he, "the deafness was bilateral, and with two exceptions, of faint perception of sound, complete. Among the twenty-nine cases of total deafness there was only one who seemed to give some evidence of hearing afterwards."

One theory attributes the loss of hearing to inflammatory lesions, either at the centre of audition within the brain, or in the course of the auditory nerves before they enter the auditory foramina. Thus Stillé says: "This symptom appears to depend chiefly upon the pressure of the plastic exudation in which the nerves are imbedded." The other theory attributes the loss of hearing to inflammatory disease of the ear, and especially of the labyrinth. Dr. Sanderson, who is an advocate of this latter theory, remarks as follows: "As regards the nature of the affection, there appears to be good reason for believing that, like the blindness observed under similar circumstances, and sometimes in the same cases, it is dependent on inflammatory changes in the organ of hearing itself. Dr. Klebs was kind enough to show me in the pathological museum of the Charité, at Berlin,

a preparation of the internal ear of a soldier who had died of epidemic meningitis complicated with deafness, in which fibrinous adhesions existed between the bones of the internal ear and the walls of the vestibule. Dr. Klebs stated that in the recent state the mucous lining of the vestibule was detached." In the case of a young woman who was deaf from the commencement and died on the eighth day, "both tympana were natural, but in the left membrana tympani was found a dense white thickening as large as a pin's head. On the same side the lining membrane of the semi-circular canals was distinctly thickened and loosened, and in the anterior canal there were semi-fluid purulent masses." Professor Knapp also states: "The nature of the ear disease is, in all probability, a purulent inflammation of the labyrinth." According to him no disease of the middle ear could cause such complete deafness, and, as evidence that the deafness is not due to central disease, Dr. Gruening obtained by electrization the normal reaction of the auditory nerve within the cranium. Moreover, if the lesion which destroys hearing is within the cranium, why is not the function of the other cranial nerves also abolished. Drs. Keller and Lucae have also, in three post-mortem examinations, found evidences of disease of the labyrinth.

An argument in support of the former of these theories is the fact, that the lesion which produces the deafness is not ordinarily attended by any marked subjective symptoms referable to the ear as otalgia, etc. Again, the fact that the deafness is always bilateral and simultaneous in the two ears, comports better with the doctrine of a central lesion than with that which locates the lesion in the ear. But the true theory can only be positively established by dissections, and as we have seen, several post-mortem examinations have revealed inflammatory disease of the labyrinth in those who have died having this form of deafness, while in no case, so far as I am aware, has the ear been found free from inflammatory lesions. Therefore, the theory which ascribes the deafness to disease of the ear is much better established than the other, and in the present state of our knowledge we must accept it. Moreover, most of the aurists of this city, who have had excellent opportunities to examine these cases, believe in this theory.

Nature.—If we examine the literature of cerebro-spinal fever, we will find that three theories relating to its nature have been advocated; one that it is a local disease, occurring epidemically; the second, that it is akin to typhus fever, or is a form of it; and the third, that it is a disease *sui generis*.

The first theory, that it is an epidemic local disease, once had many adherents, but it is now nearly discarded. Job Wilson, in 1815, considered it a form of influenza, and he could discern no utility in drawing a distinction between spotted fever and influenza. We, in this day, can see no resemblance between the two, except that they are both pandemics.

A more plausible view is, that it is merely an epidemic inflammation of the cerebral and spinal meninges. Even Niemeyer says that it presents no symptoms except such as are referable to the local affection. But a moment's thought will show us that cerebro-spinal fever differs as widely from simple meningitis, as scarlet fever with its pharyngitis differs from idiopathic pharyngitis. Cerebro-spinal fever begins abruptly, usually in those with previous good health; and its initial symptoms, we have seen, are severe; while sporadic meningitis ordinarily occurs in those of feeble or failing health, with an insidious approach, and with gradually increasing symptoms. And though the two diseases have many symptoms in common, they differ in others. Scantiness of the urine, dryness of the skin, and retraction of the abdomen, are observed in sporadic meningitis, while a normal or increased amount of urine, a normal or even rounded fulness of the abdomen, and often, also, perspiration, are symptoms of cerebro-spinal fever. The two diseases differ also strikingly as regards the periods of greatest danger and the prognosis; but the conclusive proof that the disease of which we are treating is not a local affection, but constitutional, with local manifestations, is found in the fact of a constant and early blood change, which in all severe cases is manifested by the appearance of the skin, and in other ways.

Cerebro-spinal fever differs widely in many particulars from typhus, although it is probable that it was confounded with it previously to the present century, and many even now consider it a form of that disease. Their theory is, that from some unknown cause or influence the poison of the constitutional disease acquires for the time an affinity for the great nervous centres, producing their congestion and inflammation, just as that of scarlet fever causes a pharyngitis, and if we could detach from it these local manifestations, we would have a malady which differs but little, if at all, in its clinical history and nature, from typhus.

The following are some of the differences which, in my opinion, not only establish the non-identity of these two fevers, but show that there is no close relationship between them. The causes of typhus are determined. Crowding, personal uncleanness, and imperfect ventilation are sufficient to produce it in any season or climate. Such is not the case with cerebro-spinal fever. The most that can be said of the agency of these and similar anti-hygienic conditions in causing this fever is, as we have already stated, that they produce deterioration in the tone of the system, so that it is less capable of resisting the prevailing epidemic influence. The cause of cerebro-spinal fever occurs independently of the usual conditions of life and is present or operative only at long intervals; else the epidemic would not be so rare. Typhus is highly contagious; cerebro-spinal fever is not contagious, or is feebly so. Typhus is rare under the age of ten years, and is most frequent in youth and manhood, while the reverse is true of cerebro-spinal fever. Typhus commences with mild or

moderately severe symptoms, which increase in severity day by day, and the period of greatest danger is therefore at an advanced stage of the disease. Contrast this with the violence of the initial symptoms of cerebro-spinal fever, and the fact that the first and second days are most perilous. Moreover, typhus does not seem to be more prevalent during epidemics of cerebro-spinal fever, than at other times.

If we pass over those many symptoms due to lesions of the cerebro-spinal axis, which are present in cerebro-spinal fever, but are absent in typhus fever, there are other points of dissimilarity which cannot be satisfactorily explained, except on the supposition of an essential difference in the two diseases. The sordes on the teeth and gums, dry and brown fur upon the tongue, peculiar mouse-like odour, and more definite duration of typhus, are points of contrast with cerebro-spinal fever. Moreover, and as, in my mind, very conclusive evidence of the non-identity of typhus and cerebro-spinal fever, that common lesion of the former, namely, enlargement and softening of the spleen, is seldom present in the latter. The spleen has usually been found normal or moderately congested in most post-mortem examinations of cerebro-spinal fever.

Where, therefore, should cerebro-spinal fever be placed in the catalogue of diseases? It resembles scarlet fever in the suddenness and violence of its onset; sporadic meningitis on the one hand, and typhus on the other, as we have seen, in many of its symptoms; influenza and cholera, in the infrequency of its visitations, and its pandemic nature. But the particulars in which it differs from these diseases are more numerous and important than those in which it resembles them. Like a rare object in nature, which naturalists are not able to classify with others on account of dissimilarities, though it has its resemblances to more than one, cerebro-spinal fever appears to stand alone, as a peculiar constitutional disease, having a peculiar but obscure cause, and a dangerous manifestation or expression located in the cerebro-spinal system.

Prognosis.—Cerebro-spinal fever is justly one of the most dreaded of the epidemic diseases, on account of the great mortality which attends it, and the fact that those who survive are often left with some incurable ailment. The following are the statistics of fifty-two cases, most of which occurred in my own practice, and the rest I visited in consultation; twenty-six were cured and twenty-six died. Sixteen of the twenty-six who died were profoundly and hopelessly comatose within the first seven days, most of them dying within that time, and some even on the first and second days, while others lingered into the second week and died without any sign of returning consciousness. These statistics therefore show, and the same is true of the statistics of other observers, that the first week is the time of greatest danger, and if no fatal symptoms are developed during this week recovery is probable. Only three deaths occurred after the twenty-first day, one from purpura hemorrhagica, the hemorrhages taking

place from the mucous surfaces, and the other two after a sickness of more than two months, in a state of extreme emaciation and prostration. In these last cases muscular tremors and convulsions preceded death. The ten who subsequently died, but did not become comatose during the first week, were nevertheless seriously sick from the first day, but there was hope and some expectation of a different issue till near death.

There is probably no disease which falsifies the predictions of the physician more frequently than this. This is due partly to the severity of the cerebral symptoms in the commencement, which, did they occur in the common forms of meningitis, with which he is more familiar, would justify an unfavourable prognosis, and partly to the remissions and exacerbations, the occurrence alternately of symptoms of apparent convalescence and recrudescence, or relapse, which characterizes the course of this disease. Grave initial symptoms, which might seem to have a fatal augury, are often followed by such a remission, that all danger seems past, and in a few hours later perhaps the symptoms are nearly or quite as grave as at first.

Under the age of five years, and over that of thirty, the prognosis is less favorable than between these ages. An abrupt and violent commencement, profound stupor, convulsions, active delirium, and great elevation of temperature are symptoms which should excite solicitude, and render the prognosis guarded. If the temperature remain above 105° death is probable, even with moderate stupor. Numerous and large petechial eruptions show a profoundly altered state of the blood, and are therefore a bad prognostic, and so is continued albuminuria, as it indicates great congestion of the kidneys, associated probably with other internal congestions. In one case, a boy, which I had an opportunity of examining nearly a year after the attack, the kidneys were still affected. There was anasarca of the face and extremities with albuminuria. The renal congestion had apparently degenerated into a chronic Bright's disease. The result of the case I have not ascertained. Profound stupor, though a dangerous symptom, is not necessarily fatal as long as the patient can be aroused to partial consciousness, and the pupils are responsive to light. So long as it does not pass into actual coma, it is less dangerous than active or maniacal delirium, which is apt to eventuate in this coma.

A mild commencement, with general mildness of symptoms, as the ability to comprehend and answer questions, moderate pain and muscular rigidity, some appetite, moderate emaciation, little vomiting, etc., justifies a favourable prognosis, but even in such cases it should be guarded till convalescence is fully established.

Death in the first stages of cerebro-spinal fever appears to occur ordinarily from coma, but we will see from the lesions that congestion of the posterior portions of the lungs is frequent, and Sanderson says :—

"In all the fatal cases which came under my notice, the most prominent symptoms, which preceded death, were those which indicate impairment and perversion of the respiratory functions. As the breathing became more hurried and difficult, the general depression became more intense, the pulse became weaker and quicker, and the temperature of the skin more elevated."

He cites the case of a child, who died in that way but was at the same time comatose. In more protracted cases in which there is softening of portions of the cerebro-spinal axis, or fibrino-purulent collections around it, which are not absorbed, death may occur either from convulsions and coma or from exhaustion. We have already alluded to one case in which purpura hemorrhagica was developed and the child was exhausted by the hemorrhages.

Those who fully recover often exhibit symptoms usually of a nervous character, as irritability of disposition, headaches, etc., for months after convalescence is established.

Diagnosis.—Cerebro-spinal fever, on account of the nature and severity of its symptoms and the suddenness of its onset, may be mistaken for scarlatina, and *vice versa*. In one instance, to my knowledge, this mistake was made. High febrile movement, vomiting, convulsions, and stupor are common in the commencement of scarlet fever, and we have seen that the same symptoms ordinarily usher in the severer forms of cerebro-spinal fever. It will aid in diagnosis to ascertain whether there is redness of the fauces, for this is present in the commencement of scarlet fever, and in a few hours later the characteristic efflorescence appears upon the skin.

The diagnosis of cerebro-spinal fever from the common forms of meningitis is ordinarily not difficult, for while in the former there is the maximum intensity of symptoms on the first day, in the latter there is a gradual and progressive increase of symptoms from a comparatively mild commencement. Moreover cases of ordinary or sporadic meningitis occurring at the age when cerebro-spinal fever is most frequent, are commonly secondary, being due to tubercles, caries of the petrous portion of the temporal bone, or other lesion, and there are therefore in these cases preceding and accompanying symptoms, which are directly referable to the primary disease. We have seen how different the case is with cerebro-spinal fever, which in most patients begins abruptly in a state of previous good health. Again in cerebro-spinal fever, after the second or third day, hyperæsthesia, retraction of the head, and other characteristic symptoms occur, which are either not present, or are much less pronounced, in ordinary meningitis. The symptoms of hysteria sometimes bear a close resemblance to the delirium observed in certain cases of cerebro-spinal fever. But the thermometer enables us to make the diagnosis, for in hysteria there is no febrile movement. In our remarks on the nature of cerebro-spinal fever we have sufficiently described the differences between this disease and typhus.

Anatomical Characters.—The following notes of 76 fatal cases,

arranged in four series, according to their duration, show the lesions observed :—

SERIES I.—Cases fatal within three days.

CASE 1. Male, æt. 18 years; duration three days. Brain generally congested; “*puncta vasculosa*” numerous; increase of liquid in third, fourth, and lateral ventricles; liquid turbid, and containing fibrin; meninges hyperæmic; fluid in meshes of pia mater; fibrinous exudation along optic nerves and base of cerebellum; increased quantity of spinal fluid; some fibrinous exudation on anterior, but more on posterior, surface of cord, especially in dorsal and lumbar regions. Bellevue Hospital Records, March 20, 1872.

CASE 2. Male, adult; duration thirty hours. Fibrinous exudation under arachnoid, most abundant over posterior lobes of cerebrum, at base of the brain, and on medulla oblongata; dura mater (meninges?) congested; §ij or §iv of turbid serum in pericardium. American Medical Times, April 30, 1864, Wm. Frothingham, M.D.

CASE 3. Æt. 16 months; duration fourteen hours. §j of serum in ventricles; general turgescence of vessels of meninges with dark blood; pleuræ and the peritoneum covering stomach and liver injected; numerous star-like points of extravasated blood on external and internal surfaces of stomach, superior part of intestines, upon the diaphragm, and thoracic organs. Dr. Gallop, History of Spotted Fever in Vermont, 1811.

CASE 4. Æt. 12 years; duration twelve hours. Brain congested; slight increase of liquid in ventricles; meninges congested; lungs dark and congested. History of Spotted Fever in Vermont, 1811; communicated to Dr. Gallop by Dr. Bowen.

CASE 5. Male, æt. 30 years; duration three days. Numerous “*puncta vasculosa*” in brain; ventricles nearly empty, and their walls apparently healthy; choroid plexus not injected; all the meninges injected; a grayish-white exudation in nearly all the intergyral spaces, but most abundant near the longitudinal suture; pons Varolii, chiasm, upper end of medulla, and inferior surface of posterior lobes also covered with exudation; spinal dura mater hyperæmic, and its internal surface minutely injected; anterior aspect of cord nearly normal, except purulent-looking matter over cauda equina; firm exudation over entire posterior surface of cord below the upper dorsal region; cord itself apparently healthy; posterior portions of lungs infiltrated with bloody serum; a few soft, dark clots in right ventricle of heart; liver and spleen hyperæmic, and the latter soft. Burdon-Sanderson, Report on Cerebro-spinal Meningitis.

CASE 6. Male, æt. 10½ years; duration five hours. Turbid serum in ventricles; arachnoid over convex surface of brain cloudy and without lustre; thin purulent-appearing liquid in meshes of pia mater, greenish in places; turbid serum at base of brain; pia mater very vascular; arachnoid at base of brain healthy; spinal pia mater hyperæmic; blood everywhere fluid; right side of heart engorged, and lungs congested. Samuel Gordon, M.D., Dublin Quarterly Journal, 1866.

CASE 7. Male, æt. 15 years; duration one day. Turbid liquid in ventricles; choroid plexus injected; entire pia mater injected; discolored liquid in sub-arachnoid space similar to that in ventricles, not containing any appreciable quantity of pus or fibrin; spinal pia mater injected; blood fluid; lungs congested; right side of heart distended with blood. Ibid.

CASE 8. Female, æt. 21 years; duration three days. Brain congested and softened; meninges injected; effusion of serum underneath them; fibrinous exudation along longitudinal fissure; effusion of serum under meninges; blood dark and partially coagulated; serous effusion in pericardial and peritoneal sacs; a small amount of fibrin upon descending colon, ovaries, and uterus (died

six days after her confinement). W. H. H. Githens, M.D., *American Journal of the Medical Sciences*, July, 1867.

CASE 9. Male, adult; duration one day. Cranial sinuses distended with fluid blood; meninges injected at base of brain; shreds of fibrin about pons Varolii, and upper part of medulla oblongata; all the great vessels of the chest distended with blood; a large amount of fluid in pericardium; right cavities of heart distended with clots; liver and kidneys enlarged and the latter engorged. Dr. Haverty, *Dublin Quarterly Journal*, 1867.

CASE 10. Male, æt. 18 years; duration less than one day. Brain slightly congested but otherwise normal; exudation in ventricles containing apparently both fibrin and pus; exudation of fibrin and pus at base of brain and cerebellum; congestion and spots of apparent extravasation of blood in posterior portions of lungs; fibrinous coagula in both ventricles of the heart; spleen and liver enlarged and hyperæmic. Dr. J. B. Upham, *Boston Medical and Surgical Journal*, vol. lxviii.

CASE 11. Male, æt. 32 years; duration two days. Brain substance normal; fibrino-purulent exudation in ventricles thicker than that over exterior of brain; engorgement of meningeal vessels; a thin exudation of fibrin and pus over superior surface of brain and at its base, between the lobes of the cerebellum, about the origin of the nerves, and upon the surface of the medulla oblongata; lungs moderately congested, especially posteriorly; pericardium injected and fibrinous exudation upon its surface; dark fluid blood in ventricles of heart; spleen enlarged and slightly softened; one or two of Peyer's patches slightly raised; other organs normal. *Ibid.*

CASE 12. Male, æt. 21 years; duration three days. Ventricles distended by an opaque liquid having a deposit apparently purulent; a fibrino-purulent exudation over the base of the cerebellum and around the origin of the nerves of sense; $\frac{3}{4}$ of fluid in pericardium; right lung congested; left lung small from former disease; liver of normal appearance but inter-lobular veins congested; Peyer's patches slightly enlarged and prominent; spleen and other organs normal. *Ibid.*

CASE 13. Male, æt. 20 years; duration two days. Fibrin in the posterior part of lateral ventricles, and also a fungoid growth at floor of each ventricle; brain covered with a layer of fibrin permeating the pia mater in every part; exudation about the base of cerebellum, medulla oblongata and the origin of the nerves of special sense; spinal cord apparently healthy, examined to the extent of three inches; lungs congested and liver also in less degree; cavities of heart contained firm coagula; spleen large and softened. *Ibid.*

CASE 14. Male; duration three days. Vessels of pia mater engorged; fibrin in the intergyral spaces of cerebral hemispheres; also over the pons Varolii and medulla oblongata; spinal pia mater injected and exudation near the lower dorsal vertebræ. *Ibid.*

CASE 15. Male, æt. 18 years; duration thirty-six hours. Brain congested; $\frac{3}{4}$ of yellow fluid in ventricles, choroid plexus injected; meninges highly injected; adhesion of dura mater to skull along longitudinal sinus; evidences of inflammation over entire cord; turbid serum in lower part of spinal canal. *Ibid.*

CASE 16. Male, æt. 40 years; duration five and a half hours. Brain congested; $\frac{3}{4}$ of serum in ventricles; sinuses and meningeal vessels engorged with fluid blood; $\frac{3}{4}$ of fluid blood escaped when the calvarium was removed; spinal cord apparently healthy; lungs congested; $\frac{3}{4}$ of serum in pleural cavities; $\frac{3}{4}$ of fluid in pericardium; tricuspid valve thickened; urine albuminous and kidneys congested; other organs normal; blood dark and without coagulation. John A. Lidell, *Treatise on Apoplexy*, page 331.

CASE 17. Male, æt. 28 years; duration twenty-four hours. Vessels of cerebrum, cerebellum, pons Varolii and medulla oblongata congested; moderate

amount of serum in ventricles; at least $\frac{3}{4}$ of serum escaped from cranial cavity; a moderate amount of limpid serum over vertex and under arachnoid; arachnoid somewhat opaque; spinal arachnoid opaque and pearl colored; the theca vertebralis distended with serum, which contained a few fibrinous flocculi; acute hyperemia of subarachnoid vessels; substance of cord normal; both lungs congested, and extravasated blood in right middle lobe; kidneys greatly congested and of a dark red color; amber-colored urine loaded with albumen in the bladder; blood more fluid than normal. *Ibid.*

CASE 18. Male, æt. 17 years; duration thirty-six hours. Brain apparently normal, convolutions flattened; no effusion in ventricles; arachnoid dry; pia mater opaque and infiltrated with pus; spinal like the cerebral pia mater infiltrated with pus; substance of cord apparently normal; spleen somewhat enlarged. Dr. Ellis, Boston Medical and Surgical Journal, June 9, 1864.

CASE 19. Male, æt. 7 years; duration eleven hours. Bloody serum in ventricles; a layer of extravasated blood over brain, extending to the base. Dr. Sewall, New York Medical Times, July 1, 1872.

CASE 20. Male, æt. 11 years; duration eighteen hours. Brain substance greatly congested but its consistence normal; ventricles nearly dry; cranial sinuses and meningeal vessels distended with blood; no purulent or fibrinous exudation observed in any part; spots of extravasation in mucous membrane of stomach, also under peritoneal covering of stomach and intestines; blood everywhere dark and fluid. *Ibid.*

CASE 21. Æt. 15 months; duration nine hours. Ventricles normal; cerebral meninges injected; lungs congested; unusual amount of serum in pericardium; blood apparently normal. *Ibid.*

CASE 22. Female, æt. $4\frac{1}{2}$ years; duration twenty-three hours. Brain somewhat softer than normal; ventricles empty; sinuses, meninges, and superficial vessels of brain injected; turbid serum at base of brain; blood everywhere fluid; petechial spots on peritoneum; liver congested, but other organs of the trunk normal; Peyer's patches prominent. *Ibid.*

CASE 23. Female, æt. 14 years; duration two days. Increase of fluid in ventricles; cerebral meninges injected; fibrin and pus in meshes of pia mater; purulent liquid escaped from the cranial cavity; spinal meninges congested but more over anterior than posterior aspect of the cord; pus and fibrin lying over the entire surface of the cord; right lung engorged; kidneys congested; spleen normal. Charity Hospital, April 9, 1872.

CASE 24. Male, æt. 14 years; duration three days. Vessels of brain engorged with blood and brain substance much softened (autopsy seven hours after death); cerebral meningeal vessels filled with dark blood and pus along the course of the vessels; great extravasation of blood outside of spinal dura mater; congestion of lungs and hypostatic pneumonia; a large amount of fluid in pericardium; stomach and intestines normal; spleen mottled; liver and kidneys congested. *Ibid.*, April 20, 1872.

CASE 25. Male, æt. 11 years; duration three days. Convolutions flattened; brain substance of nearly normal color; lower part of middle lobes of both hemispheres, a considerable part of corpus callosum, and the right corpus striatum softened; $\frac{3}{4}$ of transparent serum in ventricles; surface of ventricles of normal color; membranes covering medulla oblongata and cerebellum were thickened and opaque, and along the base of the brain were very vascular; considerable blood flowed from the vessels of the meninges, and there was some attachment of them to the convolutions; a considerable quantity of fluid blood escaped from the interior of the spinal canal which seemed flooded and engorged; spinal meninges thickened and highly vascular; appearance of cord normal, unless a little softened; $\frac{3}{4}$ of serum in pericardium; heart and lungs healthy; liver and kidneys congested; spleen large but not apparently congested, containing but little blood; spots of extravasated blood in walls of intestines. B. J. Hicks, M.D., N. O. Medical and Surgical Journal, July, 1847.

CASE 26. Male, æt. 3 years; duration sixty-one hours. Brain and medulla oblongata hyperæmic but of normal consistence; not more than 3j of serum in ventricles; cerebral dura mater injected; arachnoid intensely injected and dry; an abundant exudation of recent fibrin in meshes of pia mater having a gelatinous consistence, which was most abundant along the vessels of vertex, and along the longitudinal fissures and fissures of Sylvius; a slight deposit also over the optic commissure. C. W. Packard, M.D., New York Medical Record, April 15, 1872.

CASE 27. Male, æt. 24 years; duration two days. Serous effusions in pons Varolii and medulla oblongata; dura mater congested and whole surface of brain bathed in bloody serum containing jelly-like particles of fibrin. John Dwyer, *Ibid.*, March 15, 1872.

CASE 28. Male, adult; duration one day. Brain healthy and without congestion; cerebral dura mater healthy; arachnoid slightly thickened; increased quantity of fluid at base of brain; considerable blood-stained fluid under spinal meninges; cord healthy and without congestion; dark fluid blood in left cavities of heart; lungs congested; spleen and other abdominal organs healthy. Dr. Haverty, Dublin Quarterly Journal, 1867.

CASE 29. Male, æt. 31 years; duration 30 hours. Softening of superior portion of left cerebral hemisphere; entire brain less firm than natural (autopsy in January, fourteen hours after death); cerebral meninges hyperæmic; lungs engorged with blood and frothy serum; heart flabby, and a large amount of dark fluid blood in its right cavities; spleen normal; kidneys enlarged; liver twice its normal size and weight, pale and friable. J. B. Upham, M.D., Boston Journal, April 16, 1863.

SERIES II.—*Duration from 3 to 21 days.*

CASE 1. Male, æt. 43 years; duration probably twelve to fourteen days. Entire brain hyperæmic; sero-purulent fluid in ventricles; exudation of meningitis over internal surface of each hemisphere; spinal membranes somewhat opaque, with considerable fluid over surface of cord; cord congested in dorsal region; spleen normal, and nothing unusual in other organs. Bellevue Hospital, February 22, 1872.

CASE 2. Male, æt. 23 years; duration eighteen days. Brain congested; turbid serum in the meshes of pia mater; slight thickening of membranes in course of meningeal artery and at base of brain; pus in right pleural cavity; pneumonia in upper part of right lower lobe; gray hepatization in upper part of left upper lobe, and red hepatization in left lower lobe; fibrinous exudation over inflamed parts; kidneys congested. *Ibid.*, March 26, 1872.

CASE 3. Male, æt. 24 years; duration five days. Fibrin and pus in both posterior cornua, penetrating the walls of the ventricles; a thick layer of pus and fibrin over pons Varolii and medulla oblongata; arachnoid upon superior surface of brain opaque, and fluid underneath; entire lower half of cord covered with fibrin and pus, most abundant on anterior surface: normal as far as observed. Bellevue Hospital, March 3, 1872.

CASE 4. Male, æt. 30 years; duration six days. Brain greatly congested; turbid serum and half drachm of pus in ventricles; cerebral meninges congested; entire spinal meninges and cord congested; a considerable amount of pus over entire extent of cord; lungs and kidneys congested; spleen and liver normal. *Ibid.*

CASE 5. Female, æt. 30 years; duration sixteen to eighteen days. Brain congested, exhibiting numerous "puncta vasculosa;" ventricle contained turbid serum, with flocculi of lymph; increase of liquid at base of brain; meninges greatly congested; increased vascularity of posterior columns; exudation in meshes of pia mater; a few adhesions between arachnoid surfaces; blood fluid, and containing gas bubbles; walls of heart flabby; Ojss of bloody pus in left pleural cavity, and left lung covered with shreds of bloody fibrin; hypo-

static congestion and cedema in depending parts of right lung; fatty degeneration of epithelia of tubuli uriniferi. *Ibid.*, May 4, 1872.

CASE 6. Male, æt. 35 years; duration four days. Considerable pus in ventricles; purulent exudation over entire surface of cerebrum and cerebellum; pus over posterior columns the entire length of cord, and in places over anterior columns. *Ibid.*, May 30, 1872.

CASE 7. Male, æt. 24 years; duration twenty days. Softening of fornix, corpus callosum, and septum lucidum; a large quantity of serum containing flocculi of fibrin escaped from the ventricles; fibrinous exudation over optic commissure, and posteriorly to it, over surface of brain and upon under surface of cerebellum; intense congestion of sinuses and vessels of the meninges. *Ibid.*, May 29, 1872.

CASE 8. Female, æt. 3 years; duration sixteen days. Convolutions flattened; brain substance everywhere pale, soft, and anæmic; walls of lateral and third ventricles softened; a large quantity of turbid liquid in ventricles containing purulent flocculi; yellowish exudation in a few intergyral spaces upon summit and sides of brain; fibrinous exudation over chiasm, and backward to under surface of medulla and over under surface of cerebellum; soft and dark semi-fluid clots in sinuses; meninges generally congested; an extended exudation in the meninges over posterior surface of cord, separated from the cord by purulent liquid; detached patches of exudation over anterior surface of cord; diploë of calvarium congested; soft and dark clots in both cardiac ventricles. Burdon-Sanderson, Report on Cerebro-spinal Meningitis.

CASE 9. Male, æt. 42 years; duration twelve days. Brain very moist and hyperæmic; ventricles not distended, but pus in posterior cornua; choroid plexus infiltrated with pus, which could be traced to surface of brain; great hyperæmia of cerebral dura mater; arachnoid everywhere opaque; pia mater of cerebellum injected; semi-transparent exudation in intergyral spaces of a gelatinous consistence; no exudation at base of brain, nor in fissures of Sylvius, nor upon medulla oblongata; spinal meninges everywhere hyperæmic; arachnoid covering the posterior aspect of the cord opaque, and its internal surface lined by exudation; under this was a layer of blood one-eighth of an inch thick over whole length of cord below the bronchial swelling; anterior aspect of cord healthy; spleen small, but soft and hyperæmic; liver and kidneys congested; lungs posteriorly at the base soft, hyperæmic, and of greater specific gravity than water. *Ibid.*

CASE 10. Male, æt. 19 years; duration five days. Numerous blood points, but no softening of brain; arborescent injection on surface of convolutions; 3i of turbid sanguinolent liquid in lateral ventricles; cerebral meninges very hyperæmic; a thick pale yellow exudation in intergyral spaces of hemispheres, covering in some places the convolutions; it was most abundant on the right side, along the veins which converge to the fissures of Sylvius, where it was $\frac{1}{8}$ of an inch thick; it had the consistence of the brain, and was imbedded in the meshes of the pia mater; a similar exudation on surface of right side of cerebellum; vascularity, but less exudation at base of brain; pus flowed from the spinal canal; no exudation on anterior surface of cord, but posterior covered with concrete pus; spleen soft and congested, but of natural size. *Ibid.*

CASE 11. Female, æt. 20 years; duration fourteen days. A considerable quantity of serum under the cerebral meninges; exudation upon the optic commissure and pons Varolii, and here and there in other points; purulent liquid over the posterior aspect of the cord, especially in the cervical and lumbar regions; its anterior aspect healthy. *Ibid.*

CASE 12. Female, æt. 15 years; duration six days. Ventricles contained turbid serum; cerebral pia mater engorged, and arachnoid opaque; purulent matter in places over the brain; entire pia mater of spine hyperæmic, and covered with a thin coating of purulent matter; purulent liquid flowed from the spinal canal; blood in all the cavities very fluid and dark; lungs much engorged. Samuel Gordon, M.D., *Dub. Quart. Jour.*, 1866.

CASE 13. Male, adult; duration fifteen days. Brain substance but little changed; ventricles contained turbid fluid; intense congestion of cerebral meninges, with opaque patches upon arachnoid; fibrin with pus at base of brain, over pons Varolii and upper part of medulla oblongata; fibrinous exudation also upon the dura mater near anterior extremity of longitudinal sinus; intense lividity in the cadaver about head, face, and trunk. Dr. Haverty, Dub. Quart. Jour., 1867.

CASE 14. Female, æt. 23 years; duration six days. Arachnoid at base of brain thickened and inflamed; pia mater much congested; fibrin along the course of the great vessels and in the subarachnoid space; spinal meninges and cord healthy. Ibid.

CASE 15. Female, æt. 15 years; duration fourteen days. $\frac{3}{4}$ iv of serum escaped from the ventricles and cavity of arachnoid; fibrin over surface of pons Varolii and medulla oblongata; spinal meninges greatly injected. Mr. Darby, Dub. Quart. Jour., 1867.

CASE 16. Female, æt. 38 years; duration eleven days. Base of brain soft and lacerable; surface of right corpus striatum softened; a large quantity of sero-purulent fluid in ventricles: fibrinous exudation over base of brain from fissures of Sylvius to cerebellum; the spinal canal contained a large quantity of sero-purulent fluid, with fibrinous flocculi; spleen turgid, but not softened; kidneys very congested; liver of the color of red lead, and converted into a pulp by scraping; intestines healthy, except injection of the lower part of ileum. Drs. F. J. Brown and T. P. Atkinson, in Simon's Report relating to Public Health, 1866.

CASE 17. Male, æt. 21 years; duration three to four days. Fibrin in posterior cornu of left ventricle; fibrinous exudation over surface of cerebrum, along longitudinal fissure, in sulci between hemispheres, over chiasm of optic nerves, along the origin of the nerves generally, and upon the cerebellum above and below; pia mater appears normal; clots of fibrin in cavities of heart; valves of heart normal; abdominal organs normal. J. B. Upham, M.D., Bost. Med. and Surg. Jour., April 16, 1863.

CASE 18. Male, æt. 23 years; duration three weeks. Brain firm and of normal consistence; $\frac{3}{4}$ j of fluid in left lateral ventricle, containing flocculent masses; in posterior cornu $\frac{3}{4}$ j of pus; similar fluid but in less quantity in right ventricle; deposit of fibrin in intergyral spaces over cerebral hemispheres; inferior aspect of medulla oblongata and cerebellum, it was in places one-sixth of an inch thick and firm; arachnoid cloudy; posterior portions of lungs slightly congested. Ibid.

CASE 19. Male, æt. 22 years; duration nine days. Ventricles contained sero-purulent liquid, with flakes of fibrin; cerebral dura mater healthy; engorgement of vessels on upper surface of brain; fibrino-purulent exudation along base of brain around the nerves of special sense, and upon medulla oblongata, extending into the depressions of cerebrum and cerebellum; hepatization of posterior part of left lung; heart normal; liver slightly congested; spleen and other abdominal organs normal; Peyer's patches normal. Ibid.

CASE 20. Male, æt. 18 years; duration thirteen days. Ventricles distended with fluid containing pus; cerebral meninges hyperæmic; over medulla oblongata and inferior aspect of cerebellum a deposit of fibrin from two-eighths to three-eighths of an inch thick; slight congestion of posterior portion of lungs; heart and abdominal organs healthy; solitary glands and Peyer's patches enlarged. Ibid.

CASE 21. Male, æt. 18 years; duration four and a half days. Effusion in ventricles; cerebral meninges congested; fibrinous exudation over upper surface of hemispheres of cerebrum and over cerebellum; organs of trunk apparently nearly normal. Ibid.

CASE 22. Male, æt. 23 years; duration four days. $\frac{3}{4}$ j of serum in lateral ventricles; all the cerebral sinuses engorged with blood; pia mater injected;

fibrinous deposit over entire surface of cerebrum, cerebellum, and medulla oblongata; purulent serum in sheath of spinal cord; organs of trunk healthy. *Ibid.*

CASE 23. Male, æt. 19 years; duration one week. Effusion of serum with pus in ventricles; sinuses and pia mater distended with blood; the usual exudation of fibrin over cerebrum, cerebellum, medulla oblongata, and pons Varolii; fibrinous exudation over the cord, and yellowish fluid in the sheath. *Ibid.*

CASE 24. Male, æt. 18 years; duration eleven days. Gray and white cerebral substance congested and softened; also the medulla oblongata, pons Varolii, and cerebellum; $\frac{3}{4}$ ss of sero-purulent fluid in lateral ventricles; all the cerebral meninges hyperæmic; $\frac{3}{4}$ ss of serum in cavity of the arachnoid; fibrin and pus in places in the meshes of pia mater; a large amount of fibrin over pons Varolii, medulla oblongata, and as far forward as the pituitary body; spinal meninges highly injected in every part, and considerable sero-purulent liquid in spinal canal; no pus or fibrin over cervical portion of spinal cord, but considerable of both from the seventh cervical vertebra to the sacrum; both lungs congested, and mucous membrane of stomach dark coloured and softened. Ira Russell, M.D., Bost. Med. and Surg. Jour., May 19, 1864.

CASE 25. Æt. about 15 years; duration six days. Cerebrum, cerebellum, pons Varolii, and medulla oblongata congested and softened; $\frac{3}{4}$ ss of sero-purulent fluid in lateral ventricles; choroid plexus injected and covered with fibrin and pus; $\frac{3}{4}$ ss of sero-purulent liquid in third ventricle; cerebral dura mater injected; $\frac{3}{4}$ ss of serum in arachnoidal cavity; pia mater infiltrated with fibrin and pus, following the course of the large vessels and sulci; fibrin and pus over spinal cord, the largest amount in the lumbar region. *Ibid.*

CASE 26. Male, æt. 28 years; duration six days. Cerebral membranes rather dry; a deposit of yellowish opaque fibrin over upper and anterior part of each hemisphere; also over base of brain, extending into the fissures, and over a portion of the cerebellum; whole length of spinal cord covered with a deposit similar to that upon the brain, less in quantity towards the upper extremity of the cord than below; lungs pale and healthy; liver and kidneys of dark colour; fibrinous coagula in each side of heart; $\frac{3}{4}$ ss of serum in pericardium. J. F. Adams, Bost. Med. and Surg. Journ., Aug. 16, 1866.

CASE 27. Female, æt. 50 years; duration four days. Whole brain œdematous, serum escaping on pressure; a small quantity of serum in ventricles; cerebral meninges injected and cloudy; $\frac{3}{4}$ iv to $\frac{3}{4}$ v of serum escaped from cavity of cranium; points of hepatization in the lungs; red corpuscles crenated; a small fibrinous clot in left ventricle, but blood otherwise fluid; slight effusion in pleural cavity. Dr. Hutchinson, Amer. Jour. of Med. Sci., July, 1866.

CASE 28. Male, æt. 75 years; duration four days. Brain hyperæmic; much serum in ventricles, coagulating after exposure; also greenish pus in ventricles; cerebral dura mater congested; small wart-like bodies extending into brain from dura mater; surface of brain covered with a greenish substance of cheesy consistence, which in some places concealed the convolutions, but elsewhere occupied only the intergyral spaces and depressions; heart, spleen, and liver large; kidneys normal; pink spots on mucous surface of stomach. Robt. T. Edes, M.D., Amer. Jour. of Med. Sci., July, 1864.

SERIES III.—*Duration over twenty-one days.*

CASE 1. Male, æt. 24 years; duration two months and seven days. Brain-tissue œdematous; a small portion of right middle lobe softened next to lateral ventricles; ventricles filled with clear serum; pia mater at base of brain thickened and opaque; on convex surface normal; spinal pia mater in dorsal region infiltrated slightly with pus; a thin layer of pus on posterior surface of cord, but none around posterior roots of nerves; left lower lobe in a state of red hepatization; emphysema of right lung. Bellevue Hospital, June 17, 1872.

CASE 2. Male, æt. 8½ years; duration two months. Cerebral convolutions flattened; sulci narrow; brain-tissue in the neighbourhood of subarachnoid space somewhat softened; Zij to Ziv of serum with flocculi of lymph in lateral ventricles; pia mater slightly adherent to base of brain, and fibrin in its meshes, especially upon the inferior surface of the cerebellum; no fluid in subarachnoid space; fluid in spinal canal increased; fibrinous exudation in pia mater around posterior and inferior portion of the cord; arachnoid in this situation adherent to dura mater by fibrin, and formed connective-tissue; spleen and other organs of trunk normal, except congestion of kidneys. *Ibid.*, June 20, 1872.

CASE 3. Duration thirty-five days. Portions of brain softened, also the medulla oblongata and pons Varolii; over the greater part of the posterior portion of the brain was a layer of fibrin, and along the course of the vessels in this situation pus was observed; dura mater dry and adherent to calvarium; about three pints of turbid serum escaped in attempting to remove the brain; only the cervical portion of spinal cord was examined, and this was found covered with greenish-looking fibrin; dark grumous blood with shreds of fibrin in the right cavities of heart; spleen rather large; common bile duct inflamed and impervious; other organs and tissues healthy. J. W. Moorman, M.D., *Amer. Journ. of Med. Sci.*, October, 1864.

CASE 4. Male, æt. 23 years; duration thirty-five days. Zij of serum in lateral ventricles; congestion of cerebral pia mater; yellowish fibrinous deposit in intergyral spaces upon upper surface of hemispheres; also a similar deposit with pus over pons Varolii and medulla oblongata; thoracic and abdominal organs healthy. J. B. Upham, M.D., *Boston Medical Journal*, April 16, 1863.

CASE 5. Male, æt. 21 years; duration twenty-two days. Brain somewhat softened; Zij of serum in ventricles; cerebral sinuses filled with dark blood; diffused redness of pia mater over cerebrum and cerebellum; fibrinous exudation over medulla oblongata two lines thick; yellowish serum in sheath of spinal cord; cord completely encased in fibrinous exudation one-quarter inch thick. *Ibid.*

CASE 6. Male; duration five weeks. Substance of brain of normal consistence and no blood points on its cut surface; more than Zij of turbid serum, containing purulent matter, escaped from the interior of the brain; veins of cerebral meninges somewhat injected; a thin milky fluid in places over surface of cerebrum; a small fibrino-purulent coagulum upon the upper surface of each cerebral hemisphere; a layer of tenacious fibrin three-eighths of an inch thick over the origin of the nerves of special sense, pons Varolii, medulla oblongata, and posterior fissure of cerebellum; Peyer's patches presented the shaven beard appearance, but otherwise the organs of the trunk were normal. *Ibid.*

CASE 7. Male, æt. 40 years; duration six and a half weeks. Brain of normal consistence; lateral ventricles distended with exudation containing pus; choroid plexus infiltrated; anterior two-thirds of cerebrum covered with fibrin of a greenish-yellow colour; adhesions of pia mater, inferior surface of anterior lobes, optic commissure, crura cerebri, and pons Varolii covered with exudation; pus upon medulla oblongata. W. S. Armstrong, *Atlanta Medical Journal*, June, 1866.

CASE 8. Female, æt. 18 months; duration twenty-four days. Brain normal; bloody serum in ventricles; entire pia mater of brain deeply injected, and posterior portion engorged. Charles Chester, M.D., *Medical and Surgical Journal*, November, 1847.

SERIES IV.—*Duration unknown.*

CASE 1. Male, æt. 20 years. Purulent liquid in all the ventricles; cerebral meninges and surface of brain greatly congested; pus on convexity and base; pus over posterior surface of cord in lumbar and dorsal regions; none in cervical; softening of cord in upper part of dorsal region; mucous membrane of

bladder injected and softened; bloody urine in bladder; urethra congested; lower lobes of lungs congested. Bellevue Hospital, April 13, 1872.

CASE 2. Male, æt. 23 years; duration more than one week. Sero-purulent liquid in lateral and fourth ventricles; cerebral pia mater infiltrated with pus at several points at base and over convex surface; below brachial plexus spinal pia mater infiltrated with a thick layer of pus, completely covering the cord; kidneys and lungs congested; spleen large. *Ibid.*, April 29, 1872.

CASE 3. Male, æt. 43 years; duration more than one week. Sero-pus in ventricles; fibrin and pus over convex surface of brain, and at base in the meshes of the pia mater; a small plate of bone in spinal pia mater; fibrin and pus in pia mater, over posterior inferior two-thirds of cord at points; cord not notably changed. *Ibid.*, May 7, 1872.

CASE 4. Female, æt. 20 years; duration more than ten days. Numerous blood points on incised surface of brain; turbid serum and fibrinous flocculi in lateral ventricles; choroid plexus and velum interpositum coated with fibrin; cerebral dura mater more vascular than normal; vessels of pia mater over entire brain hyperæmic; slight increase of subarachnoid fluid; spinal fluid turbid and quantity increased; slight exudation in spinal pia mater and a few adhesions between arachnoid surfaces; blood fluid and gas bubbles in cavities of heart; Ojss of bloody sero-pus in left pleural cavity; left lung coated with soft blood-stained shreds of fibrin; this lung compressed; hypostatic congestion and œdema of depending part of right lung; liver large, flabby, and fatty; spleen normal; fatty degeneration of tubuli uriniferi. *Ibid.*, May 10, 1872.

CASE 5. Male, æt. 47 years; duration probably about two days. Blood points on incised surface of brain; a large amount of transparent serum in ventricles; vessels of cerebral pia mater, arterial and venous, engorged; membranes thickened, adherent, and opaque (was an habitual drunkard); a considerable quantity of clear liquid under the meninges, over convex surface, and at base of brain; spinal membranes congested, but free from exudation; blood fluid, and of a dark-brown colour; no notable change observed in the organs of the chest. W. H. H. Githins, M.D., *Amer. Journ. of Med. Sci.*, 1867.

CASE 6. Male, æt. 17 years; duration more than five days. Numerous blood points on incised surface of brain; meninges of brain somewhat congested; arachnoid slightly cloudy; lungs greatly engorged, and containing spots apparently apoplectic; spleen greatly enlarged, and hyperæmic; liver slightly enlarged and congested; some of Peyer's patches raised; other organs normal. Dr. J. B. Upham, *Boston Med. and Surg. Journ.*, vol. lxviii.

CASE 7. Male, æt. 25 years; duration probably less than one week. Whole brain substance injected; pus in posterior part of right ventricle; choroid vessels full; walls of ventricles opaque; serum in lateral and third ventricles; pia mater congested and adherent in places to the brain; upper portion of spinal pia mater injected; lower portion not examined; lungs intensely congested, and of a deep-red colour; right lower lobe solidified; nodules of pneumonia in left lung; heart substance, liver, intestines, and kidneys injected and dark; "spleen not overfull and rather light-coloured." John A. Lidell, M.D., *Treatise on Apoplexy, etc.*, page 331.

CASE 8. Male, adult. Brain softened; ventricles not distended, normal; dura mater adherent to the meninges covering the brain; arachnoid thickened and without lustre; vessels of pia mater engorged with dark blood; yellow purulent matter in intergyral spaces of cerebrum; fluid in subarachnoid space slightly turbid and quantity increased; arachnoid and pia mater showing evidences of inflammation over entire cord; in region of third and fourth dorsal vertebræ 3j of pus; cord softened opposite third and fourth dorsal vertebræ; normal above and below. F. C. Læber and A. T. Watson, *American Medical Times*, May 7, 1864.

CASE 9. Male, adult. Substance of brain congested, and numerous blood points on cut surface; ventricles not distended, but posterior cornu of right

ventricle contained a little pus; a thick layer of fibrin in the sulci of cerebrum; more at vertex than laterally; increased quantity of clear fluid in subarachnoid space; entire base of brain covered with fibrin; the least upon the cerebellum; appearance of spinal meninges the same as cerebral; blood fluid, not coagulating in several hours. *Ibid.*

CASE 10. Female, adult. Brain much congested; a small amount of fluid in lateral ventricles; ependyma thickened and congested; cerebral dura mater injected, $\frac{3}{4}$ ss of sanguinolent fluid in cavity of arachnoid; purulent exudation in pia mater along longitudinal and Sylvian fissures, at base of brain and in sulci between convolutions; pia mater agglutinated with fibrinous exudation and hyperæmic; the spinal meninges, as far as could be observed from the cranial cavity, resembled the cerebral; portions of lungs hepatized; $\frac{3}{4}$ j of bloody fluid in pericardium; soft clots and fluid blood in cavities of heart; spleen normal; liver congested; ecchymotic points in mucous membrane of stomach. Charity Hospital, March 24, 1872.

CASE 11. Male, adult; duration probably three days. Effusion of serum in cavity of cerebral arachnoid; meninges hyperæmic, and deposit of fibrin over anterior surface of cerebrum, and a thick deposit over and around the optic commissure, over entire cerebellum, crura cerebri, pons Varolii, and medulla oblongata; exudation over entire length of cord to cauda equina; spinal nerves enveloped by the deposit; pus at points along the cord; organs of trunk apparently healthy; right cavities of heart distended with blood and a large clot in right ventricle. W. S. Armstrong, Atlanta Medical and Surgical Journal, June, 1866.

The blood undergoes changes, which are due in part to the inflammatory, and in part to the constitutional and asthenic nature of the disease. The proportion of fibrin is increased in cases that are not speedily fatal, as it ordinarily is in idiopathic inflammations. Analyses of the blood published by Ames, Tourdes, and Maillot, show a variable proportion of fibrin from 3.40 to more than six parts in 1000. In sthenic cases accompanied by a pretty general meningitis, cerebral and spinal, there is, after the fever has continued some days, the maximum amount of fibrin, while in the asthenic and suddenly fatal cases, with inflammation slight, or in its commencement, the fibrin is but little increased. The most common abnormal appearance of the blood observed at autopsies, is a dark colour with unusual fluidity, and the presence of dark, soft clots. Exceptionally bubbles of gas have been observed in the large vessels, and the cavities of the heart. An unusually dark appearance of the blood, small and soft dark clots, and the presence of gas bubbles, when only a few hours have elapsed after death, indicate a malignant form of the disease, in which this fluid is early and profoundly altered. In certain cases the blood is not so changed as to attract attention from its appearance. The points or patches of extravasated blood which are observed in the skin during life in a certain proportion of cases, usually remain in the cadaver. In incising them the blood is seen to have been extravasated, not only in the layers of the skin, but also in the subcutaneous connective tissue. Extravasations of small extent are also sometimes observed upon the thoracic and abdominal organs.

In those who die after a sickness of a few hours or days, namely, in the

stage of acute inflammatory congestion, the cranial sinuses are found engorged with blood, and containing soft, dark clots. The meninges enveloping the brain are also intensely hyperæmic in their entire extent in most cadavers; but in some, in certain parts only, while other portions appear nearly normal. In those cases which end fatally within a few hours, this hyperæmia is ordinarily the only lesion of the meninges; but if the case is more protracted, serum and fibrin are soon exuded from the vessels into the meshes of the pia mater, and underneath this membrane over the surface of the brain. Pus cells also occur mixed with the fibrin, sometimes so few as to be discovered only by the microscope, but in other cases in such quantity as to be much in excess of the fibrin, and be readily detected by the naked eye. Pus, which in these cases no doubt consists of white blood-corpuscles which have escaped with the fibrin from the meningeal vessels, sometimes appears early in the disease. Thus, in the *Dublin Quarterly Journal*, 1866 (Series I., Case 6), Gordon relates a case in which death occurred after a sickness of five hours, and a purulent appearing greenish exudation had already occurred in places under the meninges. The exudation of fibrin commences also in the course of a few hours. Thus in a case of thirty hours' duration published by Dr. Wm. Frothingham in the *American Med. Times*, April 30, 1864, and in another of one day's duration, published by Dr. Haverty in the *Dublin Quarterly Journal* for 1867, exudation of fibrin had already occurred (Series I., Cases 2 and 9). The arachnoid soon loses its transparency and polish, and presents a cloudy appearance over a greater or less extent of its surface. This cloudiness is greatest in the vicinity of the fibrinous exudation, but it occurs also where no such exudation is apparent to the naked eye. Dr. Gordon describes a case of only eight hours' duration, in which the arachnoid was already opaque at the vertex, but of normal appearance at the base of the brain (*Dublin Quarterly Journal*, 1866) though the vessels of the pia mater were everywhere greatly congested.

The exudation, serous, fibrinous, and purulent, occurs, as in other forms of meningitis, within the meshes of the pia mater, and underneath this membrane over the surface of the brain. It is readily raised from the surface of the brain with the meninges. It is most abundant in the intergyral spaces around the course of the vessels, over and around the optic commissure, the pons Varolii, the cerebellum, medulla-oblongata, and along the Sylvian fissures. It is most abundant in the depressions, where it sometimes has the thickness of $\frac{1}{10}$ to $\frac{1}{4}$ of an inch, but it often extends over the convolutions so as to conceal them from view.

Most other forms of meningitis have a local cause, and are therefore limited to a small extent of the meninges, as for example meningitis from tubercles, or caries of the petrous portion of the temporal bone, in both which it is commonly limited to the base of the brain, or from accidents when the meningitis commonly occurs upon the side or summit of the

brain. The meningitis of cerebro-spinal fever on the other hand, having a general or constitutional cause, occurs with nearly equal frequency upon all parts of the meningeal surface, except that it is perhaps most severe in the depressions where the vascular supply is greatest. In cases of great severity, the inflammatory exudation, fibrinous, or purulent, or both, may cover nearly, or quite, the entire surface of the brain. Thus, in the case of a negro, 35 years old, only four days sick, whose body was examined at Bellevue Hospital on May 30th, 1872, the record states that there was a purulent exudation over the entire surface of the cerebrum and cerebellum (Series II., Case 6). The quantity of serous exudation varies greatly in different cases. In some the quantity is so small as scarcely to attract attention, but in other instances, especially when the disease is protracted, it is large. In a case reported by Dr. Moorman in the *Amer. Journ. of Med. Sci.* for Oct., 1866, it is stated that about three pints of turbid serum escaped from the cranial cavity in attempting to remove the brain, but as there was no measurement the statement may be somewhat exaggerated.

In those who die at an early stage of the disease, the vessels of the brain, like those of the meninges, are hyperæmic, so that numerous "puncta vasculosa" appear upon its incised surface. At a later period the hyperæmia, like that of the meninges, may disappear. If there is much effusion of serum within the ventricles and over the surface of the brain, the convolutions are apt to be flattened, and the pressure may be such, that the amount of blood circulating within the brain is reduced below the normal quantity. Thus, in the case of a child of three years, who lived sixteen days, and was examined after death by Burdon-Sanderson, the ventricles contained a large amount of turbid serum, and the brain substance was everywhere pale and anæmic.

Cerebral *ramollissement* occurs in certain cases. At one of the examinations in Charity Hospital, the patient having been only three days sick, the brain was found much softened. The dissection was made seven hours after death, so that the softening could not have been cadaveric (Series I., Case 24). At one of the post-mortem examinations in Bellevue Hospital, softening of the fornix, corpus callosum, and septum lucidum was observed; and in another, softening in the neighbourhood of the subarachnoid space (Series II., Case 7, and Series III., Case 2). In a case related by Dr. Moorman in the *Amer. Journ. of Med. Sci.* for Oct., 1866, it is stated that portions of the brain, medulla oblongata, and pons Varolii were softened (Series III., Case 3). In a case observed by Dr. Upham (Series I., Case 29) there was softening of the superior portion of the left cerebral hemisphere. Occasionally the whole brain is somewhat softened. Burdon-Sanderson, Russell, and Githens, each relate such a case. Moreover, the walls of the lateral ventricles are ordinarily more or less softened in these cases, as in the ordinary form of meningitis. In rare instances the brain is œdematous as in a case published by Dr. Hutchinson in the *Amer. Journ. of Med. Sci.*

for July, 1866. In this case the patient was only four days sick, and the whole brain was œdematous, serum escaping from the incised surface (Series II., Case 27).

The ventricles contain liquid, in some patients transparent serum, in others serum turbid and containing flocculi of fibrin, or fibrin with pus. The liquid in the different ventricles as they intercommunicate is similar. The choroid plexus is either injected or it is infiltrated with fibrin and pus. In advanced cases with the abatement of the inflammation absorption commences. The serum obviously disappears soonest and the pus and fibrin more slowly, by fatty degeneration and liquefaction. Still absorption and the return of the brain and meninges to their normal state are slow, and hence the tediousness of convalescence. An infant, whom I was allowed to examine in the practice of another physician, took the disease at the age of five months, and two months subsequently, great prominence of the anterior fontanelle and other symptoms indicated still the presence of a considerable amount of effusion within the cranium. No post-mortem examinations, so far as I am aware, have yet revealed the state of the brain and meninges in those who have had this disease at some former period and entirely recovered from it, but it is not improbable that some opacity and preternatural adhesions in places may continue for life.

The remarks made in reference to the cerebral apply for the most part to the spinal meninges. There is at first intense hyperæmia of the membranes usually over the entire surface of the cord, soon followed by fibrous, purulent and serous exudation, in the meshes of the pia mater, and underneath this membrane. Thickening and opacity of the meninges, and often adhesions, occur in protracted cases. The exudation is sometimes confined to a portion of the meninges, more frequently that covering the posterior than anterior aspect of the cord, but it may occur in any part, and in severe cases the entire pia mater of the spine is infiltrated with it. The exudation may have the usual appearance of fibrin and pus, but it is sometimes greenish and sometimes blood stained. Small extravasations of blood almost necessarily occur as a result of the intense hyperæmia, and in one case related by Burdon-Sanderson it is stated that there was a layer of blood $\frac{1}{8}$ of an inch thick over the whole cord below the bronchial swelling. In post-mortem examinations the central canal of the cord has usually been overlooked. Ziemssen relates a case, and Gordon another, in which it was dilated and filled with purulent fluid. The anatomical changes which have been observed in the cord itself have been injection of its vessels in recent cases, and occasional softening of portions. Thus, in a case which was examined in Bellevue Hospital, April 13, 1872, it is stated that there was softening of the cord in the upper part of the dorsal region. In most of the examinations the only abnormal appearance observed in the cord was hyperæmia, but in a considerable proportion of cases the records state that the substance of the cord appeared normal.

No constant or uniform lesions occur in the organs of the trunk. The most common is congestion of the lungs, especially of the posterior portions, with more or less œdema, and nodules of hepatization or points of extravasation. Effusion of serum, sometimes blood stained, occasionally occurs in the pleural and other serous cavities. The auricles and ventricles of the heart, as already stated, contain more or less blood, with soft dark clots in the more malignant and rapidly fatal cases, but larger and firmer in those which have been more protracted. The spleen, liver, kidneys, stomach and intestines, one or more, are sometimes congested, but in other cases their appearance is normal. The absence of uniformity as regards the state of the spleen, the fact that in many patients it undergoes no appreciable change, is important, since this organ is so generally enlarged and softened in infectious diseases. The agminate and solitary glands have ordinarily been overlooked at post-mortem examinations, but in certain cases they have been found prominent.

TREATMENT. *Preventive.*—Although we do not fully understand the conditions in which cerebro-spinal fever originates, it is certain, from facts observed in epidemics, that we are able to do something to diminish its severity and prevalence and to protect the community. Measures to this end must be of a twofold character, namely, such, in the first place, as are calculated to improve the surroundings of the individual, so as to conduce to a better state of health, and secondly, the regulation of his mode of life. Cleanliness and dryness of streets and domiciles, perfect drainage and sewerage, prompt removal of all refuse matter, avoidance of overcrowding, so as to procure the utmost salubrity in the atmosphere, the use of plain and wholesome food—in a word, the strict observance of sanitary requirements in all the surroundings—cannot fail to reduce the number and diminish the severity of cases; for, as we have seen, this disease assumes its worst form and numbers the most victims where anti-hygienic conditions most abound. Of scarcely less importance is a strict surveillance of the mode of life, especially of children and young people, during the time of an epidemic. We have seen that this disease not infrequently follows irregularities in the mode of life, excesses of whatever kind, and fatigue, mental or bodily. These should therefore be avoided. A quiet mode of life and moderate exercise, plain and wholesome and regular meals, and the full amount of sleep afford some, but not complete, security in the midst of an epidemic.

Curative.—It will aid in determining the proper mode of treatment to bear in mind the anatomical characters as ascertained by post-mortem examinations. As the chief danger in the first days is from the intense inflammatory congestion of the cerebro-spinal axis, the prompt employment of measures calculated to relieve this is of the utmost importance. To this end bladders or bags of ice should be immediately applied over the head and nucha, and constantly retained there during the first week.

Bran mixed with pounded ice produces a more uniform coldness, and is more comfortable to the patient, than ice alone. Cold produces a prompt and powerful effect in diminishing the turgescence of the cerebral and meningeal vessels. A hot mustard foot-bath or general warm bath with mustard, should also be employed as early as possible, since it acts so powerfully as a derivative from the hyperæmic nerve centres, tends to calm the nervous excitement and prevent convulsions. An enema to open the bowels is also proper.

Should bloodletting be employed, especially in the more sthenic cases? Even in the commencement of the present century, when it was customary to bleed generally or locally in the treatment of inflammatory and febrile diseases, a majority of the American practitioners whose writings are extant discountenanced the use of such measures in the treatment of this disease. Drs. Strong, Foot, and Miner, though under the influence of the Broussaian doctrine, were good observers, and they soon abandoned the use of the lancet and leeches in the treatment of these patients for more sustaining measures. Strong, who published a paper on spotted fever in the *Medical and Philosophical Register*, in 1811, states that certain physicians employed venesection as a means of relieving the internal congestions, but finding that the pulse became more frequent after a moderate loss of blood, they soon laid aside the lancet. Some experienced physicians of that period, however, continued to recommend and practise depletion, general as well as local, as, for example, Dr. Gallop, who treated many cases in Vermont in the epidemic of 1811.

No physician at the present time recommends venesection, but some of the best authorities, as Sanderson and Niemeyer, approve of local bleeding in certain cases. It may be stated as a safe rule that leeches or other modes of local depletion should not be prescribed in a large majority of cases, and if prescribed in any case it should be on the first day, for on the first day the maximum of inflammatory congestion is attained, and in no case should more than a very moderate quantity of blood be abstracted. Blood should only, in my opinion, be abstracted, and in small quantity, from the temples or behind the ears, in the more sthenic cases, in which, after the prompt employment of the other measures recommended, the stupor becomes more and more profound, and the patient appears already in incipient coma. But in allowing a moderate depletion it must not be forgotten that the disease is in its nature asthenic, and in its subsequent course will require sustaining measures. It is apparent, however, that the abstraction of blood if once allowed is likely to be recommended too frequently in the treatment of this disease by those who have had but little experience with it, for the state of most patients in the commencement seems so critical, and the stupor so great, that the most energetic measures seem to be required. But if the blood of patients is spared, and they are promptly and properly treated otherwise, it is surprising to see how many

emerge from the stupor and finally recover. For example, in a case related to me by Dr. Griswold, the patient seemed to be comatose for three days, being apparently unconscious and the pupils scarcely responding to light, but he recovered without losing blood. In only one case have I recommended the abstraction of blood, and this was so instructive that I will briefly relate it.

M., a female, 4 years old, was seized at 2 A.M. March 7, 1873, with vomiting, chilliness, and trembling, followed by severe general clonic convulsions lasting about fifteen minutes. On visiting her early in the morning, I found her semi-comatose, with a pulse of 132, which in a few hours rose to 156; temperature $101\frac{1}{4}^{\circ}$, respiration 44; eyes closed; pupils moderately dilated and responding feebly to light; surface presenting a dusky mottling; constant tremulousness, and frequent twitching of limbs. Four grains of bromide of potassium were ordered to be given every hour to two hours, with the usual local measures, namely, ice to the head and nucha, and a hot mustard foot-bath, followed by sinapisms to the extremities.

8th. Pulse 136; is partly conscious when aroused, but immediately relapses into sleep; head considerably retracted; bowels constipated; vomits occasionally; temperature 102° . Treatment, a leech to each temple, on account of the extreme stupor; other treatment to be continued.

9th. The leech-bites bled, though slowly, nearly five hours; pulse 180, and so feeble as to be counted with difficulty; temperature $101\frac{1}{2}^{\circ}$. The patient is evidently sinking. Treatment, a teaspoonful of Bourbon whiskey in milk every two hours, beef-tea and other nutritious drinks frequently, also the bromide at intervals. Evening, pulse 172, still feeble.

10th. Pulse 180, barely perceptible; great hyperæsthesia; temperature of axilla 100° , of fingers and hand below 90° ; axes of eyes directed downwards.

11th. Pulse still very feeble, varying from 160 to 228; temperature $102\frac{1}{4}^{\circ}$. There has been no intermission in the use of the stimulants or nutriment night or day; pupils moderately dilated and somewhat more sensitive to light.

After this the patient gradually rallied for a time, so that the pulse became stronger and less frequent, but death finally occurred after nine weeks in a state of emaciation and extreme exhaustion. Slight convulsions occurred in the last hours.

It is seen that after the loss of blood from two leech bites, this patient passed into a state of extreme exhaustion so that for three days I did not believe that she would live from one hour to another, and death finally occurred. Although the loss of blood may have been useful in relieving the stupor, yet a worse danger resulted. Experience like this, which I believe corresponds with that of other observers, shows how seldom and with what caution the blood of the patient should be abstracted.

The internal remedy most in favor with the profession of this city, and justly, in the first stage of this disease, is the bromide of potassium, especially in the treatment of children. Evidently a remedy is required which will diminish the calibre of the arterioles, and consequently the hyperæmia of the cerebro-spinal axis and its meningeal covering. Ergot has been employed for this purpose, and in some instances with a satisfactory

result; but bromide of potassium, while it contracts the arterioles of the encephalon, is at the same time a powerful sedative to the nervous system. More than any other safe internal remedy, it prevents convulsions in children, which occurring in this disease add a passive to the already intense active congestion of the cerebro-spinal axis. This agent in medicinal doses produces no ill-effect except when given frequently for a lengthened period, when it may accumulate in the system. A child of five years may take five or six grains every two, three, or four hours, according to the urgency of the case. After the first week it should be given less frequently and finally omitted. The practice of some physicians, of continuing the use of the bromide in frequent large doses after the first or at least second week, is to be deprecated, for after a time it is apt to produce symptoms which can with difficulty be discriminated from those of cerebro-spinal fever. These are stated as follows by Mr. Wood: "Great muscular debility, dimness of sight with dilated pupils, irregular gait, the patient reeling as though intoxicated, whilst nausea, vomiting, or purgation, with abdominal pain of a dull aching character, may also be present." (*British Med. Journ.*, Oct. 14, 1872.) It is obviously better after the first week, if the symptoms are no longer urgent, to discontinue the bromide entirely, than to continue its use in such doses and for such a period that there may be danger of producing its physiological effects. Nevertheless it is proper to resume its use during periods of recrudescence which are so apt to occur at any stage of the disease.

The bromide can not be depended on to allay the pain which often, on account of its severity, requires immediate treatment, and sometimes it does not allay the excessive agitation. For these symptoms an opiate is indicated, which in my practice has produced a much more satisfactory result than hydrate of chloral. Quite moderate doses are sufficient to produce the effect desired. A patient of six years was quieted by $\frac{1}{32}$ part of a grain of sulphate of morphia. So useful are opiates in allaying pain in this disease, that some observers, as Niemeyer and Ziemssen, consider them the most valuable of the internal remedial agents which we possess, and the benefit from their use in these cases has certainly had considerable effect in disabusing the minds of physicians of the dread which they have entertained of their employment in acute affections of the brain. Mannkoff and others have employed subcutaneous injections of morphia.

Quinia is suggested as a remedy by the paroxysmal character of the pains and the fever, but I believe that I am sustained by the general experience of physicians in this city in stating that it has very little effect upon either of these symptoms, or upon the course of the disease. I have employed it in small and large doses, as many as fifteen grains per day to a child of thirteen years, but am not aware that it has been of any

service except as a tonic. There is perhaps no better remedy for the nausea than bismuth in large doses.

Frequent counter-irritation along the spine by dry cups or an irritating liniment is useful from the first, and vesication of the nucha by cantharidal collodion or otherwise when the ice-bag is discontinued. Sustaining measures should also be commenced early. Tonics, vegetable and ferruginous, should be administered after the disease has continued a few days, alternating with and finally superseding the bromide. I have in some cases employed the citrate of iron and ammonia. The diet must be nutritious, consisting of the meat broths, milk, etc., during the entire course of the disease. Most patients require alcoholic stimulants sooner or later. In cases presenting a feeble pulse, and other evidences of prostration, their early and continued employment is advisable, as in the case which I have related, in which whiskey was administered every two hours after the second day. The constipation is ordinarily best relieved by enemata. The room should be dark, of comfortable temperature, and quiet.

ART. II.—*Six Cases of Lumbar Colotomy, with Remarks upon this Operation, and a Table of Eighty Cases in which it was Performed.*

By ERSKINE MASON, M.D., Adjunct Professor of Surgery in the University of New York; Visiting Surgeon to the Charity and the Roosevelt Hospitals, New York.

CASE I.—Mrs. F. A., aged 39 years, had been suffering from venereal stricture of the rectum for two years. When she first came under my observation she had a very tight annular stricture about one inch above the anus. Failing to accomplish much by the use of bougies, I divided the stricture in several places with Cooper's hernia knife on the 2d of July, 1870; I then dilated the parts first with my finger then by a bougie, and discovered by this means the presence of another stricture one inch above the first; spiral in form, which extended up the bowel for about two inches; this stricture I also divided, and, while the patient was under ether, dilated it with bougies till the largest size was passed. Her condition was by this operation greatly relieved. Bougies were introduced at intervals of three or four days, and the diarrhœa and pain, from which she had suffered, diminished. About this time she was suffering from some uterine disturbance; she was transferred to the uterine ward of Charity Hospital, where the use of the bougie was unfortunately discontinued. A month after this it was noticed that constriction of the rectum had again returned. Bougies were resorted to and the stricture was also ruptured. In March I found the constriction was so great that it only allowed the introduction of the end of the index finger. When I came on duty the following April, her condition being no better, I proposed to her the operation of opening the colon after Amussat's method, as a last resort.

The patient having agreed to this proposal, I performed the operation

of lumbar colotomy on the 8th of May. Just before the operation the colon was distended by a large quantity of warm water, and a tampon introduced to prevent regurgitation. A pillow was then placed under the right side, and the rules laid down by Mr. Allingham for finding the colon were strictly followed. Having divided the deep fascia, the intestine, of greenish-hue and greatly distended, made its appearance. This was carefully examined both by myself and several of my colleagues, and we had no doubt but that it was the descending colon which we were observing, indeed some of us thought that its longitudinal bands were apparent. Two sutures were passed through the gut, and the intestine was then well drawn up, attached to the integument, and a longitudinal opening made in the gut, half an inch or more in length, when out gushed a large quantity of comparatively clear water (which we took to be the enema which had been administered) and which had a feculent odour. The patient did well until May 11th; the pain she had previously suffered having ceased. At 11 o'clock that night, while being moved from one bed to another, she complained suddenly of a pain in her back, and this continued more or less until the following afternoon, when I was surprised to find her with an anxious countenance, hands, arms, and face quite cold, respiration thoracic and very rapid. The wound had united firmly throughout its whole extent, but there was an erysipelatous blush all around it. I opened one end of the wound and allowed exit to about two teaspoonfuls of pus, which afforded relief to the pain in her back. I saw her again about 9 o'clock that evening, when she was passing rapidly into a comatose state. The erysipelas had extended by this time all over the back and for a considerable distance up the side of the body, and the edges of the wound which had been opened presented the appearance of commencing hospital gangrene. During the last five hours of her life she had complete suppression of urine.

Autopsy.—As made by Dr. Edward G. Janeway, thirty-seven hours after death. Rigor mortis almost wanting; skin slightly jaundiced; edges of wound everted, and presented a gangrenous appearance; blood throughout the body black and fluid. Upon opening the abdomen, no general peritonitis was found; the cavity contained about three ounces of bloody serum. Peritoneum covering the spleen was adherent to the diaphragm by old adhesions. The lower end of the great omentum was bound down in the pelvic cavity by old adhesions to the uterus, thus pulling down the transverse colon and its splenic flexion; the latter towards the median line, so that its course lay over the anterior border of the kidney. The descending colon, instead of occupying its normal position, lay over the hilus of the kidney and outer border of the psoas muscle, was empty and contracted. There was a clean transverse opening through the peritoneum, half an inch above the crest of the ilium, an inch and a half in length; through this opening a knuckle of the jejunum passed, and was stitched to the skin on either side of an opening corresponding to the inner one. This portion of the intestine was eight inches from the duodenum. The peritoneum covering this portion of the intestine for four inches upwards, and eight inches downwards, presented evidences of recent inflammation. These portions of intestines had become adherent to one another, and to the peritoneal opening, so as to close the latter. The mucous membrane of the jejunum at the artificial opening was simply congested; there was no evidence of peritonitis around the opening. Ascending portion of the duodenum was adherent to gall-bladder by old adhesions. The uterus was

adherent to the rectum, closing Douglas's *cul de sac*. She evidently at some time had had pureperal peritonitis. Microscopical examination of kidneys showed blood effused in a few malpighian bodies; the latter were granular, in some their capsules were thickened. In the convoluted tubes the epithelium was granular, increased in size, nearly filling the tubes, but intact. Straight tubes; epithelium detached, showing in some places the tubes almost entirely denuded. The stroma showed increase of connective tissue, with some free oil globules. The liver structure showed the liver-cells large, granular, and fatty.

The points of great interest in this case are:—

1. The false position of the jejunum, so enormously distended.
2. The abnormal position of the colon.
3. No peritonitis immediately around the wound.
4. The relief of rectal pain after the operation.

CASE II. *Cancerous Stricture of the Rectum*.—Mrs. A. S., aged 64; mother of fourteen children, ten of whom were living. There was no hereditary taint of cancer in any of her family, and had always enjoyed good health until five years ago, when she first noticed some pain on defecation. She became a patient in Charity Hospital May 8th, 1871. At this time she was extremely feeble, and her sufferings were frightful. For some days she suffered from absolute constipation, this condition alternated with diarrhœa and bloody discharges, accompanied with intense bearing down pains. A tight stricture was discovered about two inches from the anus, and the whole recto-vaginal wall was infiltrated with a cancerous mass, as well as the neck and posterior portion of the fundus uteri. There was also present a recto-vaginal fistula. Her condition on the 26th of May was such that it did not appear possible for her to last many days, but for the sake of giving her some ease from her agony, I proposed colotomy. This was readily agreed to by the patient and her friends, and on May 27th, I did the operation, which she bore remarkably well. The distressing pain and constipation were much relieved, and she was in a condition, temporarily at least, to make life tolerable. For a month she may have been said to have greatly improved; her appetite improved and she gained in strength. The disease, however, progressed, and she died from exhaustion on the 27th of August, just three months after the operation.

At the *autopsy* all the organs of the pelvis were found matted together in one cancerous mass, the muscles and bones being also involved. At a point midway between the promontory of the sacrum and the anus, the rectum had entirely disappeared.

CASE III. *Cancerous Stricture of the Rectum*.—Mrs. E. W., aged 37, has had seven children; family all healthy; has never known any of her relatives to have had cancer. She was a large, stout woman, but of late has lost flesh rapidly. I first saw her about June the 1st, 1871, with Dr. Edward G. Janeway, who placed her under my care. With the exception of an attack of inflammatory rheumatism six years ago, she has enjoyed good health, till last October, when, getting her feet wet, she was seized the following morning with severe pain through her hips and urgent desire to evacuate the bowels. Her bowels previous to this had been constipated. In her efforts at stool, she stated, at this period, she had no fecal movement, but a slimy bloody discharge. From this date followed

the usual train of harassing symptoms attendant upon cancer of the rectum. On examination, per vaginam, a hard mass was felt in the recto-vaginal septum. The rectum, about two inches from the anus, was blocked up by ulcerated cancerous deposits so as only to admit the introduction of the little finger, and that with great pain. There was also an ulceration upon the margin of the anus which appeared two months ago. She had also a purulent offensive discharge from the bowel. At this time she was suffering from diarrhœa, having some ten passages during the day, and each movement attended with excruciating pain, while at night she was tormented with lancinating pains through the pelvis. I advised her to submit to colotomy at once. For the purpose of having the operation performed she entered Charity Hospital, June 12th, and that afternoon, the bowel having been somewhat distended with warm water, I opened the descending colon in the left lumbar region. The operation was performed without any particular difficulty, but owing to the large amount of adipose tissue in this region, and remarkable development of the muscles, the depth of the wound was unusually great. The operation was finished and patient placed in bed at 10 minutes after 4 o'clock. 5 P. M., pulse good and full, 92; temperature 98° ; complains of some pain in the wound; 10 gtt. Magendie's solution of morphia were given simultaneously. 7.45 P. M., pulse 120, has vomited several times. $10\frac{1}{2}$ P. M., complains of pain in the wound; pulse and temperature the same; 30 gtt. of tinc. opii with some whiskey given by the mouth.

June 13. Slept better during the night than she has done for some time before; pulse 120, temp. $101\frac{1}{2}^{\circ}$; tongue dry, and still complains of the wound and some pain in left iliac region. She took that day milk punch and some morphia. Evening, pulse 132, temp. $101\frac{1}{2}^{\circ}$, face flushed, respiration hurried, tongue slightly coated and dry, vomited during the day, has had two movements of the bowels, both per rectum and artificial opening. Pain over iliac region somewhat increased by pressure. She was given tinc. aconite rad. gtt. ij with liq. ammon. acet. $\bar{3}$ j every two hours, and a warm fomentation applied over the abdomen. 11 P. M., pulse 140, has great thirst, face flushed, respiration hurried, countenance anxious, vomited once during the evening; slept a good deal during the night.

14th. A. M., pulse 136, temp. $99\frac{1}{2}^{\circ}$; great thirst, countenance still flushed, is sweating; wound is erysipelatous, and its edges swollen, removed some sutures, and some sanious fluid was discharged; takes milk and beef tea in large quantities, with ice. Evening, pulse 132, temp. 102° ; face less flushed; 11 P. M., has not slept this evening; complains of some colicky pains.

15th. A. M., pain over abdomen has disappeared; sweating; pulse 136, feeble; temp. $98\frac{1}{2}^{\circ}$; did not sleep the previous night; has vomited several times during the night, and stomach still irritable; more sutures removed and more sanious discharges followed; erysipelatous blush is less, though the parts are considerably swollen and the wound looks bad. Her countenance appeared better and respiration was less hurried; sol. of 20 grs. quinia were injected into the colon through artificial opening. 6 P. M., unable to pass her water; a small quantity of dark red smoky urine was drawn and found to contain albumen, with numerous blood and granular casts. Pulse 136 and weak, temp. 102° ; sweating continues, hands and feet cold; tongue dry and brown, anxious countenance, and respiration again hurried; bowels moved through the artificial opening during the day, and she vomited several times; rum was administered, but she vom-

ited it; stimulants were given every hour, some of which she retained. 10 P. M., pulse 150 and can hardly be felt; extremities cold, is sweating profusely; recognizes no one, tosses about the bed.

16th. A. M., pulse 136, temp. 100°; slept but little during the night; looks badly, sweats profusely, respiration less hurried. She asked for a cup of coffee and an egg, which she took with relish; she also takes her stimulants—20 grs. sol. of quinia were thrown into the colon. Wound dressed as usual with carbolic acid; its edges are covered with a gray slough—it is offensive. 12 M., pulse cannot be counted; patient very restless, sweats profusely, respiration hurried and difficult; died quietly at 2 P. M. During this period of five days, the patient was never known to have had any chilly feeling, and after the operation no longer complained of her rectal difficulty.

Three hours after death we were permitted to make but a partial examination of the abdominal cavity only. The colon was found to have been opened behind the peritoneum—that membrane not having been wounded. In this vicinity there had been some slight peritonitis, the gut being slightly adherent to the abdominal walls, and for about two inches there was some injection of its vessels. There was no general peritonitis; the intestines, except that portion of the colon mentioned, were remarkably pale. The cancerous disease had involved all the pelvic organs. The kidneys were deeply congested.

Just about this period several cases of erysipelas and pyæmia made their appearance in the wards of the hospital. This patient, however, was in a private room on the first floor of the hospital, far away from any other patient, save the one whose history is given in our Case II.

CASE IV. *Intractable Stricture of the Rectum.*—John M., æt. 26, single, wood turner, admitted into Roosevelt Hospital February 15th, 1872. Family history good, never has had syphilis. Two years and a half ago had an attack of dysentery, and six months after his recovery, he began to complain of pain in the bowels; this was accompanied by constipation, which caused him to strain violently while at stool, and the feces were passed in scybalous masses. December 25th, 1870, he had a severe attack of enterorrhagia, and for weeks following passed considerable blood. It would occasionally occur during straining at stool, but gradually decreased till February of the same year when he ceased losing blood. Slowly but perceptibly the act of defecation became more and more difficult, accompanied by a dull burning pain, most intense in the middle of the sacrum, and extending down into both thighs. In the rectum there was an annular stricture three and a half inches up the gut, more indurated on the anterior wall, and about three-eighths of an inch in diameter; defecation is imperfectly performed and accompanied by intense pain; he suffers almost constantly from a dull gnawing pain in the sacrum; this pain at times he describes as lancinating. His general condition is bad; is pale and very weak; when he walks he has a peculiar gait which he says is due to the pain in his back; while sitting he constantly assumes different postures to relieve a sense of constriction which he then feels in the rectum. The stricture admitted the tip of the index finger, and for some time was treated by the careful introduction of bougies, and a sedative injection, either of opium or the following R., bismuth. sub. nit. ʒij, glycerinæ, aquæ aā ʒij. Kissengen water was also given for the purpose of rendering the passages more soluble.

May 31. Speculum revealed an ulcerated condition of the bowel, chiefly on the left side of the rectum. The passage of the bougies was now discontinued, owing to the distress they produced.

June 5. Again began to pass blood from his bowels, and at times would have considerable hemorrhages which considerably reduced him, and for the relief of these injections of liq. ferri. persulph. ʒij, aqua ʒviii, were resorted to. Shortly after this date a tumour was discovered in the posterior wall of the rectum, which was ulcerated; through the abdominal walls the lumbar glands were felt enlarged, so also were the inguinal glands. He now was never free from sharp lancinating pains through the pelvis, and to the rectal trouble were now added pain and difficult micturition. The disease was now regarded both by myself and some of my colleagues as in all probability malignant in character. His condition rapidly growing worse, the bowels only being moved by cathartics, he finally consented to the operation of lumbar colotomy on left side, which I did, with the assistance of my colleagues, on the 26th of June, 1872.

Patient rested well that night, being freed from the incessant pain he had so long endured.

27th. A. M., pulse 112, temp. 102°. Urine had to be drawn by catheter; complains of no pain; 5 m of Magendie's solution of morphia given.

29th. Bowels move through the opening in the colon, catheter no longer has to be used.

30th. All sutures removed. Has considerable diarrhœa to-day, though he feels well; movements take place through artificial opening.

July 11. He is sitting up, though his diarrhœa and a urethritis, which were induced by the use of the catheter, continue.

13th. He is out of bed, though feels quite weak. The general condition of this patient was greatly improved by the operation, and for some time he had no recurrence of anything like the old agony he before experienced. Occasionally feces would pass beyond the artificial opening, and then he would be subjected to considerable irritation in the rectum, and complain of a burning sensation in the region of the rectum. This also gave rise to great straining at stool, which caused more or less prolapsus of the bowel at the loin. This was readily reduced, and no serious inconvenience ever followed, the patient readily returning the protrusion himself. He has been the subject of repeated attacks of diarrhœa which at times reduced him very much; he also has suffered considerably from seminal emissions, and an irritable condition of the bladder. In spite of these serious drawbacks, he nevertheless has gained in flesh and strength since the operation.

Oct. 25. A rectal examination reveals a great change in the condition of things; the stricture is much nearer the anus than formerly, and the little finger readily passes through it, and as far as the finger can reach the gut presents a normal feel; nowhere is there any tumefaction or induration to be felt. The edge of the stricture is very thin and to the touch is not very painful.

Without giving the lengthy details of the case as recorded in the hospital record, it is sufficient to state, that attempts have been made at various times to dilate the stricture with bougies, and they have been used up to size No. X; but owing to the discomfort which after a while they invariably gave rise to, and a reappearance of the burning sensation in the rectum, this mode of procedure could only be adopted from time to time. To allay these painful sensations various injections were resorted to, such as nitrate

of silver, iodoform, and the extract of hamamelis virginica. These would all act favourably for a time, and then lose their effect. The most serviceable of all, however, has been the extract of the hamamelis virginica.

Dec. 5. Several sinuses appeared around the artificial opening, these were opened and dressed in the usual way, and some of them have healed.

1873, *May 8.* He at times complains of pain in the rectum, which is much congested and exhibits spots of ulceration near the anus, a few sinuses near the artificial anus are still open but granulating; he, however, is decidedly better than he has been for months past. During all this time the patient has been up and about the wards (and on two or three occasions has been out of the hospital), with the exception of those periods when he was suffering from sharp attacks of diarrhœa, and even then would frequently rise and walk to the closet when the bowels moved.

CASE V. Stricture of Rectum (Cancer).—Mrs. S. E. D., aged 42, widow, dressmaker, admitted into Roosevelt Hospital Nov. 13th, 1872. Father and mother died of consumption. Patient was married at seventeen, has enjoyed good health till five years ago, since which time she has been losing flesh and strength; has had four children. Since she was nineteen has been subject to hemorrhoids, and her bowels have been more or less constipated. About two years since she began to complain of great fatigue upon the slightest exertion, and constipation alternating with attacks of acute diarrhœa and “cramps” came on. When diarrhœa was not present, feces were passed in small pieces and flattened. Blood and slimy material were also passed. The pain she experienced was bearing down, not lancinating. Soon after this an abscess appeared in the left side of the vagina, just within the orifice, which, after a little, broke, and left behind a recto-vesical fistula, through which feces were discharged during the act of defecation. The desire to go to stool soon became very frequent, and the act attendant with intense pain. On admission she seemed apparently in good health, though complained of feeling very feeble; she was of extremely nervous temperament; slept but little, and her eyes were red from almost constant crying. Appetite pretty good; no cough; heart and lungs normal; urine scanty and dark coloured, but contained no casts or albumen. Examination of rectum revealed the presence of two strictures, the first about one inch and a half from the anus, and the second an inch and a half above the first; the margin of the strictures as well as the mucous coat of the bowel was ulcerated, and the recto-vaginal wall very much thickened, and my impression was that the uterus was also involved in the disease. The strictures admitted the passage of rectal bougie No. 5. The slightest examination of these parts gave rise to severe pain and considerable prostration. Patient was placed upon tonics, and she desiring to obtain whatever relief I could afford to her sufferings, I opened the descending colon in the lumbar region on Jan. 27th, 1873. The gut was readily reached, and a ligature being passed through it, it was drawn well up into the wound, opened, and the injection of warm water which had previously been administered gushed out, together with considerable fecal matter. Through some unaccountable accident the ligature slipped through the walls of the bowel, and the gut fell into the bottom of the wound, and in my attempt to seize it, so as to bring the opened portion of the gut in situ again (which was done in a moment), my finger wounded the peritoneum and passed into its cavity. The wound was dressed in the usual manner, and patient put to bed; the operation being finished about four o'clock, P. M.

7 P. M., patient evidently labouring under great shock, pulse 112, and small; temp. 102°; gave sol. morphia, Magendie, xij gtts.

She did well for the first 24 hours, after which symptoms of local peritonitis about the wound appeared, which greatly subsided under the free use of opium, quinia, and hot fomentations. General condition began to fail at noon, Jan. 29th, when stimulants were freely used; 12 hours prior to fatal result, pneumonia was discovered over the entire right lung, and there was complete consolidation at time of death, which occurred at half past nine, Jan. 29th. No *autopsy* could be obtained.

CASE VI. *Ulceration of Rectum, Stricture; Recto-Vesical Fistula.*—Mr. G. W. H., aged 27, had always enjoyed good health till three years ago, when in April, 1871, he was seized one night with severe pain in the region of the umbilicus, this was associated with fever and tenderness upon pressure over the abdomen, the “bowels were also swollen.” He was under the care of a homœopathic practitioner at that time, who told him he had peritonitis, for which he was ordered an injection of water and castile soap, and subsequently took five pills, which moved his bowels. This attack continued for nine weeks, during which his bowels were regular. At the end of that period he gradually got better, and though feeble and emaciated, resumed his work as clerk in the post-office, where he continued until October, 1871, when he had to give up, on account of an attack of fever and ague, and of this he has had repeated attacks up to the time of his death. About March, 1872, he began to experience a constant pain in the region of the bladder; the appetite and strength failed very fast, and the bowels became loose, and in a few months the dejections became slimy but not offensive. He was then seen by Dr. W. R. Gillette, who discovered that the rectum was ulcerated. Shortly after this, wind and small pieces of white material commenced to be discharged from the urethra. Feces soon began to pass through the urethra, and urine by the rectum. From this time he has been more or less a great sufferer, though at times would be able to resume his work for a few days. About March 1st, 1873, he was sent to me by Dr. Gillette, for the purpose of having an operation performed. I found him extremely weak and nervous, and in the habit of taking large quantities of laudanum for the purpose of relieving his pain and diarrhœa, which latter troubled him greatly early in the morning. Upon rectal examination, the bowel was found very much ulcerated, and two slight constrictions were appreciable opposite the promontory of the sacrum.

With the intention of doing colotomy I sent him to the Roosevelt Hospital, March 3d. Here his condition improved and he abandoned the use of laudanum. Desiring to put off the operation for a while longer, he left the hospital March 15th, and went into the country, where his general health was greatly benefited. I now urged him to have the operation done at once, while his general condition was so good, but desiring to return to his work again for a short time, he postponed it. Soon all his old symptoms returned, and with greater severity. At times his agony was frightful, his bladder becoming filled with feces, and the great distress which it caused the patient to void his urine, soon reduced him to a very critical situation. He now desired me to resort to the operation, which I did, for the purpose of affording him some slight temporary relief.

He re-entered the hospital May 9th, 1873, in a most debilitated condition, and with the expectation, both on the part of the patient and myself,

that he could live but a few days. Indeed I had grave doubts if he would survive the operation.

On the afternoon of May 12th, I opened the descending colon in the lumbar region. This time I injected the gut with air previous to the operation, in place of water, as had been my previous habit, and made my incision through the tissue oblique, as suggested by Mr. Bryant. Contrary to my expectation, but very little shock followed the operation, and on the following day he stated he felt better than he had for two weeks. During the first night nothing but urine passed through the artificial opening.

May 13th. There is but little discharge of urine and feces from the urethra, but a slight discharge of pus. Without giving a detailed account of his further daily history, it will be sufficient to state that his general condition markedly improved, and he was relieved of all his old pain. This gratifying condition continued till May 24th, when he had a recurrence of his old ague. This was controlled by quinia; but from this time his appetite failed, and he grew more and more feeble; latterly refusing all food, and died without pain, from exhaustion, June 3d, at 4 P. M., 22 days after the operation.

The *autopsy* showed the intestines firmly bound down in the pelvic cavity from the result of tubercular peritonitis. The mucous coat of the colon was in several places the seat of tubercular ulceration, and the rectum also was extensively ulcerated. Posteriorly there was a communication from the rectum into the bladder, which admitted the index finger; just along-side this opening was another about the same size which opened into a loop of colon, which was firmly adherent to the bladder. The bladder was very small, its walls thickened, and the mucous coat ulcerated and covered with a diphtheritic membrane; the prostate was the seat of an abscess; with the exception of the lungs, the apices of which were the seat of tubercular deposit, the other organs appeared healthy.

The operations resorted to at the present day for the purpose of relieving patients suffering from retention of feces, may be described as those proposed by Littré, Callisen, and Amussat. We believe it was Littré who, in 1710, first suggested the propriety of opening the intestine through the abdominal walls for this purpose.

In these cases he advised that the sigmoid flexure be opened in the left iliac region; the operation being suggested in reference to infants with imperforate rectum. The earliest record that we have of this operation having been done in the adult is by Pilhore, of Rouen, in 1776, but, in place of opening the colon in the left side, he modified the operation by operating in the right iliac region, and there opened the cæcum.

This method of operating upon the adult is now very justly abandoned, unless in exceptional cases, for the same reasons that would render it suitable in infants, viz., anatomical grounds.

To avoid the dangers attendant upon opening the peritoneum, as well as placing the artificial anus in a more convenient location, Callisen suggested the propriety of the operation we now style *lumbar colotomy*. This suggestion was made in 1796, and consisted in opening the descending colon from behind, between the duplicature of the peritoneum, by a *vertical incision* in the left lumbar region.

It appears that in practising this operation upon the dead body of a child, he failed in reaching the intestine without wounding the peritoneum, and abandoned the idea; at least we have no record of his ever having practised it upon the living, and we have the statement of many subsequent writers, that the idea was abandoned, and, for a time at least, its great value was lost sight of. Velpeau in his surgery says, "It is not worthy of being rescued from the oblivion to which the moderns have consigned it. Incomparably more difficult, and not less dangerous, than the preceding [Littre's], it would be also more inconvenient."

The operation which at the present day is chiefly resorted to in the case of adults, bears the name of that of Amussat. While attending the great Broussais for scirrhus disease of the rectum, this skilful surgeon was led to reflect upon the various means that had been proposed for the formation of an artificial anus, and as a result of his studies, he modified the method devised by Callisen, so that he considered it not only a safe but justifiable operation.

While Callisen intended to do the operation on the left colon in the lumbar region, and by a vertical incision through the integument and muscles, Amussat applied it to the ascending colon in the *right* lumbar region, and by a *transverse incision*. In this consists all the differences of the operation as devised by these surgeons. The operation at present called lumbar colotomy, is now chiefly performed in the left lumbar region (though it may be equally applicable to the right side), the situation suggested by Callisen, but by the transverse incision proposed and performed by Amussat. The credit of this operation may therefore with truth be said to belong equally to both Callisen and Amussat.

Though Littre and Callisen never applied their operations to the living subject, this was not the case with Amussat, who first did his operation upon the adult, June 2d, 1839; and in the papers he published upon this subject in the years 1839 and 1841, he relates six cases in which he had performed the operation, and in five of these it was successful. This being a matter of record, and his first case being alluded to by Mr. Erichsen (in his work on *Surgery*), who was present at the operation, we were not a little surprised to find that Mr. Allingham, in his recent work on *Diseases of the Rectum*, referring to Amussat's paper published in 1839, "*On the possibility of establishing an artificial anus in the lumbar region*," remarked, "It is by no means certain, however, that he ever performed the operation." Such little favour had this operation found with surgeons, that at the time of publishing his last paper, Amussat found but six cases, with the exception of his own, where the operation had been performed, three of them in France and three in England.

While referring to these various modes of opening the intestine, we must not omit that of Finc, of Geneva, who for retention of feces opened, in the umbilical region, the transverse colon. It was, however, his inten-

tion to establish the artificial anus in the small intestine, but the transverse colon presented and was opened. (*Brit. and For. Med.-Chir. Review*, 1844, vol. 18.) This was done in 1797. We find in our researches but little concerning this operation. There is a record of two cases where this operation has been performed—one by Kade (*Petersburg Med. Zeitschrift*, xii. fas. 2, 3, 1867), the other by V. Wahle (*ibid.*, xii. fas. 5, 1867), and in both these cases death resulted.

In the performance of colotomy circumstances will at times arise which will call for a modification in the course and direction of our external incisions. Thus in very corpulent persons, some may prefer to combine the incisions of Callisen and Amussat, or some other line of incision may be indicated, should a curvature of the spine be present, rendering the space between the last rib and crest of the ileum too contracted for the ordinary method to afford room for our manipulations, as occurred in a patient of Mr. Bryant, whose case is given in our collection of cases.

Amussat's method certainly affords advantages over the incision of Callisen, in that it gives us more room; the muscles, being cut across, for the most part, readily retract, and if nerves are exposed they can be more easily avoided, and wounded vessels better controlled. Mr. Bryant has adopted an *oblique incision*, first used, we believe, by M. Baudens, in 1842, for the opening of the ascending colon (*Med.-Chir. Trans.*, vol. xxxv. p. 99), and claims that "it gives more room for manipulation when the colon is empty, it takes the line of the nerves and vessels that traverse this part and lessens the risk of their division. It follows the ordinary integumental fold of a patient when assuming the recumbent posture, and thus favours repair, and seems to tend much towards the prevention of the prolapse of the bowel that is always prone to follow such an operation." (*Bryant's Surgery*, p. 369, Am. ed.)

We adopted this incision in one of our cases where the space between the last rib and crest of the ilium was very narrow, and were much pleased with it; as for its tendency to prevent the prolapse of the bowel taking place, sufficient time did not elapse before the death of the patient to warrant us in deciding as to its advantage over the transverse incision. As to its protection of vessels and nerves, we would say, the nerves may readily be avoided, and bleeding will often amount to nothing, at times not a vessel requiring the ligature, whether we adopt either the oblique or transverse incision. In truth it may matter but little what method we shall pursue, the great desideratum in the operation being to avoid wounding the peritoneum.

The operation as now performed is done almost exactly in accordance with the rules laid down by Amussat. At first surgeons would resort to this operation only after constipation had existed for some length of time; then, the bowel being distended by its contents, it would be readily distinguished. Now, since in many cases the operation is resorted to at

an earlier stage of the disease, it becomes of very great advantage to distend the colon. This may be done either by a large warm-water enema or by distending the intestine with air. We believe this was first practised by Mr. Allingham. I have made use of both these methods, and decidedly prefer air to fluid. Its advantages consist both in its cleanliness and the avoidance in a great measure, at times altogether, of a fluid commingled with fecal matter saturating the wound, which often, we think, delays a speedy union of the wounded structures, not to mention the danger, if the peritoneum be opened, of the fluid entering its cavity and giving rise to fatal peritonitis. Should we pursue the practice of Amussat and tap the intestine first with a trocar, this might perhaps be avoided in the case of fluids, but not in every case, as our experience has testified.

Whatever course we pursue, it perhaps may seem superfluous to remark that the injection should not be made till the patient is fully under the anæsthetic, and the rectum then may be plugged with wet lint and maintained in position by the finger of an assistant. Were this plan not adopted, we should but inflict unnecessary pain on the patient, and by the time we came down upon the bowel we might find, not a distended intestine, as we anticipated, but a collapsed bowel, owing to the injection having escaped per anum.

The lumbar region, in which the operation of colotomy is to be performed, is a quadrilateral space, having for its boundaries, above, the last rib, below, the iliac crest, behind, the longissimus dorsi and sacro-lumbalis group of muscles, while anteriorly, it is a vertical line drawn from the centre of the crest of the ilium to the last rib. In this space the colon lies in front of the kidney, separated from it by adipose tissue; the centre of this space corresponds with the deep or fascia transversalis, and is separated from the quadratus lumborum muscle by some adipose tissue. Anteriorly and externally the colon is in contact with the small intestines, and its distance from the spine must vary according as it is distended or contracted. The great point, however, is the relation of its posterior aspect to the peritoneum. Amussat believed that in the adult a lumbar meso-colon never exists, that the colon is free from peritoneum, at least on its posterior third, and that the cellular tissue external to the peritoneum formed its outer sheath. This cellular space, caused by the separation of the layers of peritoneum, begins at the union of the transverse and lumbar colon, having no very distinct line of demarcation below, but usually ceases about the crest of the ilium. Its lateral extent is defined by two of the three longitudinal bands peculiar to the great intestine, one of these bands running in front of the lumbar colon, the other two externally and internally just along the lines where the peritoneum is reflected on the parietes of the abdomen. The condition of these parts will of course vary according to the manner in which we examine the in-

testine, whether it be distended or collapsed. If the abdomen be opened in front, and we draw the colon forward, we sometimes *cause the appearance* of a meso-colon ; the practical point being, however, that the extent that is free of peritoneum depends upon the calibre of the gut. When it is much contracted it will be noticed that there will exist a very small interval between the peritoneal folds ; when it is distended the small intestines are pushed back, and the portion uncovered by peritoneum will be increased according to the distension of the colon. Now should the colon be opened, its contents escape, but it will not retract as would the small intestines, because it is adherent to the abdominal walls by its posterior surface. Hence, if we carry our incision of the fascia too far towards the anterior spine, we are very liable to wound the peritoneum, especially if the gut be contracted. When the intestine is opened, its edges being confined to the integument, the entire calibre of the gut will not prolapse, as it would in the case of the small intestine ; the posterior wall only yielding, thus forming a prolonged tube communicating with the gut. Passing the finger into the gut we do not meet any, or if at all only a slight, salient ridge (*éperon*) opposite the opening. The same disposition may be found on the right side, though here the relations of the peritoneum will be found to be more variable. Amussat contends also that the disposition of the parts is even more favourable to colotomy in early life than in adults. It not being our intention to speak in this paper of the applicability of colotomy in infants, we pass over the noticing of these views.

The patient should be placed in the prone position, slightly inclined to the right side, with a small hard pillow (air cushion) under the left side, this makes the parts more tense and prominent.

Preparatory to the operation, I have always followed the rule laid down by Mr. Allingham in the *St. Thomas's Hospital Reports* for 1870, viz., to mark out the anterior superior and the posterior superior spinous processes of the ilium, then, finding the centre point between these two spines, to draw a vertical line a full half inch behind this centre spot—for beneath this line we shall be sure to find the colon if it be in its normal position. Mr. Allingham remarks that, “from more than fifty dissections and the experience of over thirty operations, I can confidently assert, that the colon is always, normally, situated opposite this point.” We are fully prepared to confirm this statement, both from experience on the living, as well as often repeated trials upon the dead subject ; and we also agree with the statement of this writer, that the tendency is to look for the colon in front of the spot above indicated. Such being the case, the advantage of first drawing a vertical line over the colon is sufficiently obvious, as in the progress of the operation it affords us an unerring guide.

In following the transverse incision of Amussat, which should be four or five inches in length, and about midway between the crest of the ilium and last rib, let its centre cross the vertical line ; while, if we pursue Mr.

Bryant's suggestion, and make an oblique incision, we pass downwards from the lower rib in the direction of the superior spinous process of the ilium, the centre of the incision bearing the same relation to our vertical line as in the preceding method. The various underlying structures should be divided deliberately, and to the extent corresponding with the length of our incision through the skin, until we come down upon the fascia transversalis, or edge of the quadratus lumborum muscle. All bleeding should be arrested as we proceed, and certainly it should be fully stopped before we proceed with the further steps of the operation. Those who for the first time do this operation, may be amazed at the depth this incision may be, especially if there be much adipose tissue present or the muscles well developed, while if these factors be absent in the case, they may reach the deep fascia before they are fully aware of it. Now, if we desire, percussion will readily indicate that we are in close proximity to the intestine. The fascia lumborum with its muscle is readily recognized, and should be carefully divided, when almost invariably there will appear the subperitoneal fat which covers the colon; the amount of this will vary greatly in different individuals, but we have always observed it in some degree. At this stage of the operation, as we have been carefully cutting through this adipose tissue and its connective tissue, in whose meshes it is held, it separating at times in layers as it were, and the intestine shining through, we have had surgeons question if it were not really peritoneum that our knife had passed through. So constant has this adipose tissue been present in the cases, even in thin subjects, that I have operated upon, both in the hospital theatre and in the dissecting room, that, were I not to meet with it, I should at once question whether the peritoneum had not been opened.

A question will naturally arise, how shall we know if it be really the colon we have exposed? *First*, by its distension and greenish hue, if we have previously distended it. *Secondly*, we may perhaps be enabled to distinguish its peculiar bands, though in this we may be deceived, as was shown in my first case reported in this paper, where several observers, as well as myself, felt sure we had recognized them. *Thirdly*, by the following rule which Sir Phillip Crampton said was laid down by Amussat; we quote it as given in the *Dublin Med. Press* for March 5, 1845; and also in the *Am. Journ. of the Med. Sciences* for Oct., 1845, page 494.

"At a meeting of the Surgical Society of Ireland, Sir P. Crampton said that M. Amussat had discovered a sign which if not actually diagnostic (for perhaps it could not always be appreciated) yet bid fair to do much towards removing the difficulty in question, and had actually removed it in M. A.'s last operation; this sign rested on the fact, that the small intestines sustained a motion of alternate ascent and descent corresponding to expiration and inspiration, in which the lumbar colons did not participate; if, therefore, the exposed intestine presented this oscillation, it was small intestine, if it did not, it might be presumed to be the colon."

Fourthly, If we have strictly followed the rule laid down above, we

may be convinced that we are in the normal situation of the bowel, and if it be empty or flaccid, we may safely search for it at the bottom of the wound, with a confidence that our exploration will not be unavailing.

At this stage of the operation the bowel being freed from the sub-peritoneal fat, it may project up into the wound; it is well also to roll it slightly over towards the anterior spine of the ilium so as to bring that portion more into view that is uncovered by the peritoneum. If vomiting take place from the effect of the anæsthetic at this stage of the operation, place the hand over the wound, else the colon may be forced up into the wound with such force as to tear its peritoneal attachments.

Should it be deemed necessary for any reason to inspect the bowel farther before proceeding with the operation, I would strongly counsel against allowing the finger to be passed into the wound on the anterior side of the intestine, else we will be very liable to injure the peritoneum, as has happened to us in one case. Were this accident to occur, we should at once seize with the forceps the torn membrane, and tie it as we do a wounded artery; this practice has been pursued, and no unpleasant effects have followed.

Before opening the bowel, pass two ligatures through it by means of a curved needle, and having drawn the intestine well up into the wound pass these ligatures through the integument of the upper and lower side of the wound and tie them,—then fill the wound either with lint or sponges, now open the bowel either with the knife or scissors between the ligatures. The incision need not, we think, extend for more than an inch in length, and may be either vertical, transverse, or crucial, as it pleases the operator. Thus we prevent the gut, if filled with air, from falling into the bottom of the wound, and its contents there becoming extravasated, and in a great measure prevent cut muscles from being soiled with fecal discharges. At times the bowels will be at once copiously relieved through the opening thus made, while again some hours will elapse before a discharge will occur. Indeed at times it has been found necessary, especially where constipation has long continued, to resort to injections, and even scooping out the hardened feces through this opening, before the bowels become unloaded. Should an evacuation not take place at once, we would advise any further solicitation to be deferred until after the patient has fully reacted from the operation, and the wound has been sealed by plastic material.

The wound through the soft parts should be thoroughly cleansed and brought together by sutures (we prefer here the silver wire, as less liable to induce suppuration), a few fine additional sutures through the bowel confining it to the integuments, completes the operation.

The after-treatment of the wound differs in no respect from that of any other wound. In my cases I have invariably covered the back and side immediately about the wound with lint spread with oxide of zinc ointment,

and in some instances carbolic acid has been added. This is changed as often as it becomes soiled, thus we have prevented chafing which would perhaps otherwise have occurred. After the bowels have been freely moved once or twice, it will be a source of great comfort to the patient to have a pad placed over the artificial opening and a bandage applied; this being readily removed whenever necessity requires it. For the purpose of pad we have used oakum, which, from its odor, feeble power of absorbing the discharge, as well as its unirritating properties, has always proved a grateful appliance. The stitches which have confined the bowel to the integument may be safely removed by the fourth or fifth day, or else left to nature to be cast off. If the case progresses well and the patient feels able, there will be no impropriety in allowing him to sit up in bed by the fifth or sixth day. Indeed we have had him out of bed by that time.

In those cases where constipation has long existed, and copious evacuations have suddenly taken place after the operation, we may find faintness occur or a sense of great prostration complained of,—this is readily relieved by a body bandage, and the administration of brandy and ammonia.

Excessive vomiting has taken place in some cases that have been recorded and are given in our table; so obstinate has this at times proved, that patients have succumbed to its prostrating effects. This has been attributed to the influence of chloroform by those who have lost patients in this manner. We have never had this very troublesome symptom except in one patient, but it subsided after the first twelve hours, though ether is the anæsthetic we have always employed.

With reference to this vomiting, Mr. John Couper, in the *British Medical Journal*, 1869, vol. ii. p. 556, while relating a case of his own which had resulted in death from this cause, remarks that chloroform vomiting has been hitherto a not unfrequent cause of death after colotomy, and states that Mr. Curling records a case of death from this cause fifteen days after the operation, and a like result has happened in the practice of Mr. Maunder. He does not seem inclined to attribute this entirely, however, to chloroform; as he suggests that it may be due to the proximity of the colon and stomach to the solar plexus, both receiving nerves from this source, and the laying open of the colon and traction upon it causing reflex irritability of the stomach. Cases of death from this cause have not been sufficiently frequent however to militate against the operation, and if it be really due to chloroform, we should avoid it, by resorting to the safer anæsthetic—ether.

Soreness and some tenderness may be complained of around the side and over the region of the left iliac fossa for twenty-four hours after the operation, due no doubt to the distension of the colon which our injections produced, the result of the wound and the natural inflammation that follows; this readily subsides, either by itself or by warm fomentations and a dose of morphia.

One other phenomenon, which almost always occurs later in the case, to a variable degree, may manifest itself soon after the operation, and of this we think the patient should be made aware, for, should it take him unawares, it may prove a source of unnecessary alarm, as it did in one of our cases, and so terrified the patient that he fainted—we refer to prolapse of the bowel at the artificial opening; this prolapse may amount to several inches; it causes no trouble, however, as it is readily reduced either by the finger or rectal bougie.

Some have noticed a contraction of the opening take place either during the process of healing or some little time afterward, and affording an obstacle to the ready evacuation of the bowels. We have never observed this in any of our cases. When it shows itself, however, a conical plug, we think, would counteract it; should this not prove sufficient, the opening should be enlarged either by the sponge-tents or the knife; in one case that has been reported the actual cautery was successfully used; this was in a case, if we remember aright, where the opening in the colon was encroached upon by exuberant granulations from the muscular tissues about the wound. Any other indication that might arise calling for special treatment would require only such as would suggest itself to any surgeon. As to the matter of diet we have never felt it necessary to restrict our patients.

While referring to the position of the patient during the operation, we described the one usually selected as the most convenient for perhaps both patient and surgeon. The operation has been done, however, with the patient sitting down and leaning over the back of a chair, ether spray only being used to benumb the parts in the region of the incision.

To the credit of American Surgery, we must not leave the operation of lumbar colotomy without referring to the fact, as recorded in the *Transactions of the College of Physicians, Philadelphia*, vol. 1, 1842, page 99, that on the 15th of March, 1838, Dr. W. Ashmead, of Philadelphia, in the case of a female, aged 38, with scirrhus of the rectum, opened the descending colon in the left lumbar region, "by a vertical incision in the triangular space between the edges of the obliquus externus and latissimus dorsi muscles, without injury to the peritoneum. He was led to do this operation, after considerable study upon the cadaver, believing it to be a superior method to the one proposed by Amussat;" and the paper states that not until two years after his operation did he hear that Callisen had proposed a similar method. His patient did well till the end of ten or twelve days, when diarrhœa set in, and she died of exhaustion on the sixteenth day.

Of the various methods that have been proposed for opening the colon we give the decided preference to that which is known as Amussat's; especially does it appear applicable to those cases which in adults we believe call for the operation of colotomy. Applicable as it is for either the

ascending or descending colon, we prefer the opening to be made in the left lumbar region whenever it is admissible, as some recent cases appear to show that when the right colon is opened, patients emaciate sooner—a fact which shows, perhaps, that the large intestine has greater powers of absorption than is commonly attributed to it. Though not, strictly speaking, coming under the head of colotomy, it may be not amiss to observe in this paper, that where circumstances demand it, the small intestine may be opened, and with results far more favourable than at first thought might be anticipated. This remark is abundantly fortified by the cases that have from time to time been reported in the various medical periodicals, and which we have read while pursuing our study of the literature of colotomy, and, indeed, we may say, in way of parenthesis, that the whole subject of relieving intestinal obstruction by means of abdominal section is deserving of more notice than is at present given to it by our profession, at least in this country, and if the operation be resorted to sufficiently early in the disease, before the vital powers are at their lowest ebb, the result will be more satisfactory.

Under this head we cite the following case, recorded in the *Medical Times and Gazette*, 1869, vol. ii. p. 280, occurring in the practice of M. Dolbeau, at the Beaujon Hospital. The operation was performed on July 3d, 1869, upon a man 32 years of age, who had obstruction of the bowels due to swallowing cherry-stones; there was a swelling in the right umbilical region, and here the ilium was opened; nearly two handfuls of cherry-stones and a large quantity of fluid came through the opening. Patient recovered and, the report states, was well fifty days afterwards.

Dr. Fage, in his article on intestinal obstruction, in *Guy's Hospital Reports*, for 1868, states that of 75 cases of intestinal obstruction treated at the hospital in fifteen years, 17, about one-fifth, were from bands; and Dr. Brinton, in his work on *Intestinal Obstruction*, found that in 600 cases of obstruction, 31 per cent. were from bands, 43 from intussusception, 17 from stricture, 8 from torsion. In most of these an operation could have afforded relief. In the cases where obstruction was caused by bands, the small intestine was implicated in 95 per cent. Where the difficulty was due to twisting or stricture, 88 per cent. of all the cases he analyzed involved the large intestine.

Intestinal obstruction, it is well known, is divided into two classes—acute and chronic, and each of these, in a measure, has symptoms peculiar to its respective class. We also know that, for the most part, acute cases denote trouble in the small intestine, while chronic cases point to the colon as being at fault. That cases are met with, where the symptoms are so blended that it is difficult, if not impossible, to diagnosticate to which bowel the seat of trouble belongs, is equally true. It is not in the province of this article to discuss the symptoms of these two classes of cases; sufficient is it to state that it will require a most careful consideration on the part of the

surgeon before an intelligent resort to surgery can be brought to bear upon the case.

The peritoneum is still justly held in great respect by surgeons and any encroachment upon it abstained from whenever possible, yet wounds of this membrane are not now held in such dread by the surgeon as formerly, for our means of combating peritoneal inflammation are more efficacious, as the results of our cases show, and the portion of membrane wounded has often lost its peculiar physiological properties and its pathological tendencies before being injured by the knife. Thus, among the cases of colotomy we find many where the peritoneum has been wounded, either purposely, as in Littre's and Fine's operation, or accidentally, as in Amussat's, which have terminated favourably.

Mr. Martland's case, recorded in the *Edin. Med. and Surg. Journal*, vol. xxiv., and also reported in Mr. C. H. Hawkins's excellent paper on colotomy, in vol. xxxv. of the *Medico-Chirurgical Trans.*, of a man aged 44, with stricture, and whose colon was opened in the left iliac region, was living seventeen years after the operation; and this, if not the longest duration of life where colotomy has been done in the adult for the relief of stricture of the rectum, is certainly among the most favourable results of the operation that have been recorded.

The case of M. Reybard, reported also in Mr. Hawkins's collection of cases, shows to a surprising degree what liberties have been taken with both peritoneum and colon. In a man aged 28, with cancer of the sigmoid flexure of the colon, three inches of the left colon were cut out, and the ends sewn together in the left iliac fossa. This patient recovered, and died one year after the operation from the return of the disease, which made its appearance in the same locality six months after the operation.

Of all the cases recorded where the colon has been opened without injury to the peritoneum there are *very, very few* where death can be attributed to the operation. True, cases will be found in both Mr. Hawkins's collection of cases as well as in those in this paper, where death has followed soon after the operation, yet a careful study of these cases will show the statement just made to be correct. No more can death be said to follow as the result of this operation, than that for strangulated hernia, or tracheotomy for the relief of certain cases of asphyxia, or the ligation of a wounded artery at the seat of wound to arrest hemorrhage. On this account, therefore, may we more readily urge patients to avail themselves of the benefits which colotomy holds out, than would otherwise be the case, did the *mortality from the operation* give a different result.

This operation, though originating in France, does not appear to have been frequently resorted to by the French surgeons, and the same may be said in reference to German operators. In our own country, from the few cases reported, one would suppose that our profession was utterly ignorant of the great relief from suffering this operation may afford, and

of its ability, in many cases, of restoring to health and usefulness those sorely afflicted with disease. Among our own surgeons we have been able to find *but thirteen cases* reported, where colotomy has been done, and eleven of these will be found among our tables of cases, though it is very likely that cases may have been overlooked by me in my researches, or that journals containing them have not been within my reach. Be this as it may, the operation in our own land may be said to be in its infancy. The first operation that was done in the United States was, we believe, by Prof. J. M. Bush (*Am. Journ. of the Med. Sciences*, N. S. vol. xix. p. 275) in December, 1847, for cancerous stricture of the sigmoid flexure, the patient, a lady, dying from peritonitis from the cancer, on the fourteenth day after the operation.

The English surgeons have certainly obtained, and are fully deserving of, the great credit of having not only popularized the operation, but perhaps also of extending its field of usefulness, and causing it to be deservedly recognized among the justifiable operations of modern surgery.

Among the names of those who have probably done most to cause the operation to be favourably received, and now so generally done throughout the United Kingdom, though it may be chiefly in London, we would mention the names of Curling, Hawkins, Holmes, Bryant, and Allingham, though we are by no means unmindful of the other hospital surgeons of London who have done much in this direction, so that at present it might be difficult to find one who has not both performed and publicly advocated the operation. To England, therefore, rather than to the home of Amussat, are we indebted for much that we know of the merits and the availability of colotomy in many cases; and that by the labours in this field the sufferings of many patients have been greatly mitigated, all must admit who have ever had any experience in colotomy, or are acquainted with the diseases for the relief of which this operation is resorted to.

If this article, imperfect as it is, should be the means of calling the attention of our profession more fully to this subject, and of inducing them to resort to the operation more frequently than they have heretofore done, we feel *sure* that they will confer a great blessing upon many of their patients, and we will thus be repaid for any labour we have expended in its preparation.

The operation is not only a safe one, when carefully performed, and one which can rarely be said to be the cause of death, but also one which, should any circumstances arise during the performance of the same which seemed to indicate the impropriety of opening the gut, even if the deep fascia be opened, may be abandoned with safety, as is shown by the following case:—

At a meeting of the Royal Medical and Chirurgical Society, June 25th, 1867, Mr. J. O. Forster communicated a case where, for the relief of colloid cancer and obstruction of the bowel, colotomy was attempted; the colon being found flaccid and empty, lying deep in the wound, the incision was closed, and in

four days the parts were perfectly healed. For the further particulars of this case we refer our readers to the April number of the *Am. Journ. of the Medical Sciences* for 1868, p. 544.

Cases are also recorded where the colon has been opened not only in one location, but in two situations at subsequent periods. Thus, in the case of a male patient in the practice of Mr. John Hilton, the colon was first opened in the left loin, after a time a slough came away from the wound, and it closed; eleven weeks afterward the bowel was opened in the left lumbar region. Patient recovered and lived nine months, dying finally from exhaustion. (Case No. 12 of our collection.)

In proof of one of the advantages which colotomy confers upon those suffering from cancer of the rectum, Sir James Paget cites the case (No. 47 of our collection) of a man in whom he had done colotomy for this disease, and says that since the feces had been no longer subjected to the influence of the rectum morphia had completely lost its power of constipating; so the patient could enjoy this drug without becoming constipated. We have never seen this statement confirmed by other operators, nor has our experience verified it, in two cases in which we looked for the result; in one of these cases the bowels were so constipated after it, as to require the use of an enema for their relief.

Colotomy, though first suggested for, and, we believe, first put in practice in, cases of malignant disease of the bowel associated with obstinate constipation, has been amply demonstrated in practice to be equally available, and more successful in future results, in a variety of affections of the bowel other than cancer.

The diseases for the relief of which it has now been done, and for which we advocate its adoption, are those of cancer, intractable stricture of rectum or colon, no matter from what cause, obstruction from the pressure of tumours, which indeed is often but one form of intractable stricture, ulceration of the rectum or colon in some of its phases, and for the relief of vesico-intestinal fistula, especially in the male.

In cancer it was at first adopted only when absolute obstruction to the passage of fecal material had actually taken place, and that after it had existed often for many days, and the sufferings of the patient were extreme; at times, indeed, even when *in articulo mortis*. These cases certainly are not ones to test the merits of an operation, either from a scientific point of view, or as regards the great comfort which is almost sure to follow upon its timely performance. Even at the present day we fear that there are surgeons who are prone to discourage an operation, or in our judgment wait too long before resorting to colotomy.

Not only has the efficacy of this operation been fully proved in just such cases as we have alluded to, but its value has also been shown in those cases which are called painful cancer of the rectum, where even but little obstacle as yet exists to the passage of the feces. To Mr. Curling,

perhaps, more than to any other surgeon belongs the honour of illustrating this fact, and by his writings bringing it to the notice of the profession. That many surgeons have been too backward in realizing the truth of his statements as well as those of many other operators, at least in our own country, we believe to be but too true.

If we wait till the vital powers are almost entirely worn out by long-continued suffering, or until absolute constipation occurs, the shock to the system may at once be so great that the life of the patient is forfeited. We know full well that very many cases are recorded where constipation has existed for weeks, and that, too, associated with cancer of the bowel, the operation has been performed and life prolonged for months. This, however, is no reason why suffering should be allowed to try the vital powers, when a speedy relief may be afforded and the future benefits of the operation greatly enhanced.

Well aware are we that much may be done by medical means for the relief of these patients, and that other operations have been devised and put in practice for their relief. All the other operations, we believe, entail more suffering and danger to the life of the patient, in a majority of instances, and, of course, like colotomy, can only hope to be of but temporary benefit in cases of cancer, and even where they have been done, colotomy will have to be resorted to to give subsequent relief. Some of these operations we have seen tried by others, and in a measure have practised them ourselves; but the impressions we have received are not favourable to their performance in cases of cancer. Indeed, those operations, such as cutting away portions of diseased intestines, or the scooping out diseased masses, as practised and advocated by some of the German surgeons, we cannot but regard unfavourably. These operations being intended as but palliative measures, in this disease, we feel that not only the simplest but the least painful, and the one which exposes the patient to the least risks, should be selected.

Strictures of the rectum are also met with not cancerous in their nature, some of which, as all practitioners well know who have had much experience with stricture, are as deserving of the title intractable as is that class to which we apply this name in the urethra.

In our paper on venereal stricture of the rectum, which appeared in the January number of the *Am. Jour. of the Med. Sciences* for this year, we gave the credit to Mr. Allingham of having first proposed and put in practice the operation of colotomy in this type of stricture. Mr. Curling, in a letter to the editor of this Journal, which appeared in the April number, appears rightly to claim the honour which I had ascribed to Mr. Allingham. It is, therefore, with pleasure that I now correct the error into which I had fallen, and state that Mr. Curling believes he was not only the first to suggest, but also to put in practice colotomy in this class of cases; and in the *London Hospital Reports*, vol. iv., he published two

cases of intractable stricture with ulceration, in which he performed the operation in 1865.

In this class of cases, as with the former, various are the operations that have been employed for their relief; many of these for a time appear to have not only afforded relief but to have cured the patient. Yet the experience of those of the largest acquaintance with these affections, tends to show that the same troublesome condition soon returns. Indeed so exquisite is the pain in many of these cases, caused by the passage of the bougie, that its use not only becomes the source of the greatest injury to the patient, but prevents its use being maintained for the purpose of keeping up the dilated condition of bowel which our operation has temporarily produced. The cause of the bougie often giving rise to this intolerable anguish has been satisfactorily explained, we think, in that fascinating book of lectures, by Mr. John Hilton, on *Rest and Pain*. He truly remarks that often "diseased conditions of the upper, middle, or lower part of the rectum, except the last inch or two, induce but little pain." The reasons for this he fully explains and illustrates in his consideration of the mucous membrane of the rectum.

With these very cases at times it has been found that after colotomy, feces no longer continuing to irritate the strictured gut, the stricture will, as it were, give way, and its irritability cease. This is well illustrated in those cases where there is present more or less ulceration in addition to stricture. But *few* cases of this class occur, we imagine, where these two lesions do not exist. This condition of things was well shown in the fourth case given from my practice. Here, at the time of operation, the tip of the finger could not engage in the stricture, and the slightest touch from the bougie caused intense agony.

For those cases not unfrequently met with where ulceration of the rectum and portion of the colon exists and has continued for some length of time, colotomy, we believe, is especially indicated, not only as a means of mitigating pain and relieving the diarrhœal symptoms, but one that often cures the disease. The causes of these ulcerations are various. We believe, however, that they will be very frequently met with of venereal origin, of which we have spoken in our paper on venereal stricture of the rectum, already referred to. Again we have met with them of tubercular origin, as well as resulting from what has been termed chronic dysentery. In very many of these cases we can but palliate the disease by the means most commonly in use, and in others these resources prove of no avail. The natural result of these cases is often the formation of troublesome fistulæ either about the anus or communicating with the bladder in the male and the vagina in the female, contractions of the bowel, and perhaps perforation of the intestine into the peritoneal cavity and fatal peritonitis. Whatever way life is terminated, it is usually after a long and continued period of suffering. In

this class of cases colotomy acts by deviating the course of fecal material, the ulcerations are no longer constantly irritated by the passages, and, the source of irritation being removed, the parts are placed in a state of physiological rest, so to speak, and as a result, the parts being quieted, Nature cures the disease by her reparative process.

This is by no means theoretical reasoning, as cases abound which show just this condition of things to have taken place. Mr. Allingham, in the last edition of his work on rectal diseases (Am. edit., 1873), cites a case of this disease in a woman upon whom he did colotomy in 1867, and she continues perfectly well. Other writers have also reported most favourable cures, and we ourselves have verified this in our own practice, in a patient a year after the operation. Therefore we can in these cases not only regard colotomy as a palliative measure, but one that may actually cure the disease.

Among those cases where the bowels are obstructed from the pressure of tumours which are in themselves irremovable, or where the cause of obstruction cannot be ascertained, a number of cases favourable to this operation are reported, and which has not only palliated the symptoms, but prolonged life for some time.

To substantiate this point we have given some instances in our collection of cases, and shall cite the following two cases.

Mr. Steele, in the *Med. Times and Gaz.*, Aug. 24, 1872, says truly,

"Many cases terminate fatally of intestinal obstruction, which by timely operative interference would result favourably. A man, 52 years of age, who usually enjoyed good health, lately suffered from diarrhœa. On Jan. 6, unable to relieve his bowels he took castor oil, but without effect; next day tympanites was present, with colicky pains and fecal accumulation in the rectum, with great desire for defecation; cathartic enemata being of no use, the rectum was cleaned out and galvanism used without effect. The vital powers began to fail, but liquid food was taken and retained. On the sixth day he grew suddenly worse and colotomy was done. Flatus at once escaped, and soon afterwards feces. Localized peritonitis, inflammation of the skin, diarrhœa, gastric and intestinal irritation, etc., gave great anxiety for about four weeks. At this time the wound was well healed, but he remained weak. No passage from the rectum had since occurred, but a free discharge of thick mucus had proved troublesome. A swelling high up in the pelvis, which before the operation seemed like feces accumulated in the intestinal coils, afterwards descended and proved to be a tumour and the cause of obstruction." The patient was doing well at the time this report was made, and in conclusion Mr. S. remarks that "when the cause of obstruction is obscure and appears to be due to fecal accumulation, all legitimate means should be used to dislodge the same, but when the cause is mechanical, opiate treatment should be used, and operative means promptly resorted to. When a tumour presses upon the lower bowel, artificial anus is certainly better than a constantly forced passage, and the growth of the tumour will not be near so rapid as if compressed by feces and constantly irritated by their forced passage."

The second case was in the practice of Mr. John Hilton, and we transcribe it from his work on *Rest and Pain*. (Lecture XII., p. 294.)

"The patient was a surgeon of great intellect, who died last November. When I saw him last October twelve-month, with Dr. Jeafferson and Mr.

Hancock, he had had insuperable constipation for thirty-one days. Our joint opinion was that he could not live until the morning. There was great vomiting. We agreed that the obstruction must be somewhere in the neighbourhood of the lower part of the colon, or the higher part of the rectum. We could not detect it with the finger. We thought he would die before morning, and agreed to operate. I operated on the same evening. I made an aperture in the loins; immediately an enormous quantity of feculent matter escaped, and continued to do so for a considerable period, to the great relief of the patient. I had requested that he would not allow it to close up; however, he improved so much that he thought he might do so. The peculiarity of the case was this: that on the fourth day after the operation, from the relief of the distended condition of the colon, he passed motions by the natural anus, and continued to do so for some weeks until a gradual accumulation took place, and then a recurrence of the symptoms. I then operated on him again; the same kind of relief was afforded; and the bowels continued to be opened through the anal aperture up to July or August. He then went back to his business, and saw thirty or forty patients a day. In August last he had symptoms of pain in the hip-joint, and ultimately disease of it, from which he died on the 11th of November, more than twelve months after the first making of an artificial anus. After the first operation he used to complain of great pain in the lower angle of the wound; when I operated the second time, I put the bistoury lower down to divide the nerve which had given him so much pain, and from that time he was comparatively comfortable.

"Upon making a post-mortem examination it was found that there was no cancer. There had been a contraction of the intestine where the sigmoid flexure of the colon joins the rectum. This had produced an obstruction, and consequently a distension and over-loading of the colon. The weight of the feces had caused the colon to descend considerably below its normal position, like an inverted syphon; the feces, therefore, had to ascend, and then could not pass over the fixed point where the constriction had taken place, the weight of the colon making this part an acute angle, and so producing insuperable constipation. When the opening was made into the upper portion of the colon, the weight of feces was taken off, the accumulation in the lower part was then forced upwards by backward peristaltic action and made to pass through the rectum."

In those deplorable cases of vesico-intestinal fistula, the result of ulceration of the bowel, which at times fall to the lot of the surgeon to treat, and are beyond the reach of the ordinary operations, which in other instances are so successful, colotomy has amply proved itself to be not only the great palliative means to be adopted, but in some instances the radical cure.

The rationale of its action here is precisely similar to that we have described while advocating its use in certain cases of ulceration of the rectum and colon. Few, if any, affections are capable of entailing a greater amount of suffering and wretchedness than these lesions, especially when occurring in the male; and any operation that can at all mitigate the misery of these sufferers, should be hailed with favour both by surgeon and patient.

The earliest case in which this operation was performed and which we have found recorded, is that of Mr. Pennell, in the 33d and 35th vols. of the *Med.-Chir. Trans.* The operation was performed in November, 1849, on a man 50 years of age. The descending colon being opened after the method of Callisen, for a stricture of the sigmoid flexure of the

colon, associated with stricture of the urethra, and recto-vesical fistula, feces and air passing through the urethra in which pieces of bone, etc., were often caught. Urine passed per anum, and by the artificial anus in the first fortnight after the operation. At the time of the last note of the case, which we have seen nearly twenty-two months after the operation, the patient could perform all the functions of life with ease and comfort, and undertook the duties of manager of a very extensive and complicated banking establishment. Mr. Bryant in his *Surgery* says that a gentleman upon whom he did this operation three years ago for vesico-intestinal fistula, follows his avocation without any discomfort. Since this operation many other surgeons have fully established the efficacy of this treatment, and some of their cases are given in our table of cases embodied in this paper—indeed our Case VI. is one of this variety.

We stated that this operation had proved itself particularly applicable to these cases in the male, we were not aware until a few days ago that it had even been resorted to in the female solely for this cause. The following case is the only one in which we have ever heard of its being done in the female, and is reported in the *Med. Times and Gazette* for May 17, 1873, p. 533, by Mr. C. Heath.

This patient had twelve years before suffered from a pelvic abscess following delivery; three years later she passed from the bladder some form of membrane, and from that date continued to pass feces and flatus by the urethra. This gave rise to great pain and inconvenience which was not relieved by any treatment. It being evident that the sac of the old abscess communicated with both bladder and rectum, Mr. H. opened the colon in the left loin in Jan. 1872. The patient was immediately relieved from her sufferings and made a perfectly good recovery; continuing in good health and without any bladder symptoms up to the time of reporting the case.

In these operations the question naturally presents itself: If the disease for which colotomy is performed is eventually cured thereby, cannot the artificial anus be closed by some subsequent operation? We know that cases have occurred where nature has closed the artificial opening made by colotomy, and reasoning by analogy from those cases of artificial anus which have occurred from other causes and been cured by operation, we should be led to answer at once in the affirmative. These cases certainly seem to present fewer obstacles to an operation, there being no, or a very slight, tongue-like projection (*éperon*) to be removed as in those cases which have resulted from injury or disease. But what has been the experience of practice in these cases? Mr. Allingham states in his work, already referred to, that he has made attempts to close this opening, but as yet without success, and this also, he states, has been the experience of Mr. Bryant. Though knowing of no successful attempt, we should not be prevented from making the trial did a suitable case present itself.

In these cases of colotomy, patients for a time after the operation will be troubled with some fecal matter getting below the artificial opening, and giving rise to unpleasant symptoms, such as tenesmus, etc. This may at

times be relieved by enemata, either through the artificial opening or the natural passage.

Objections that have been raised against this operation may be thus briefly stated and answered.

First. The uncertainty of our diagnosis in certain cases. That this is very true we shall not dispute; but how is it with other operations that are constantly performed where our diagnosis is no more certain than it is in many cases of intestinal obstruction?

Second. The dangers of the operation. That colotomy is entirely free from danger, and that cases do not arise which may greatly embarrass and perplex the operator, we do not assert. But in the hands of a good anatomist and careful operator, the difficulties of almost every case will be overcome, and for the majority of cases the operation will be found easy, and, as far as the life of the patient is concerned, safe.

Third. The condemning a patient to be the subject of an artificial anus. This objection is one that patients would often naturally make, and it is one that surgeons, who have had but little or no experience with the artificial opening caused by colotomy, are prone to advance. The testimony, however, of very many of these patients, as well as of the surgeons who have had the largest experience with these cases, is that it really is of but comparatively little inconvenience. These patients are not troubled with a continued discharge of either flatus or feces from the artificial anus, a suitable pad being sufficient to prevent such a condition of things and allowing them to pursue their vocations, and mingle with people without disclosing their ailment. Indeed, in some cases, the bowels have been found to act as regularly and not more frequently than when this condition did not exist. An artificial anus, under the most favourable conditions, cannot help being a source of inconvenience in various ways, but when these objections are weighed in the balance against ulterior results, we cannot but think they should be found wanting.

The following eighty cases of colotomy, which we have collected and tabulated after considerable labour, comprise all those we have been able to find from 1853 to the present year. Previous to the year 1853, Mr. Caesar H. Hawkins had collected and analyzed 44 cases in his masterly paper, which appeared in the 35th vol. of the *Trans. of the Royal Med. and Chirurg. Society of London*. In our paper, as well as that of Mr. Hawkins, it will be observed that there are given a few cases where the bowel has been opened in other places than in the lumbar region, and we believe that in certain cases we are justified in opening the small intestine.

Of these cases we find that where the sex is given there were :—

Males, 44.

Females, 34.

The descending colon was opened by Amussat's method in 74 cases.

" ascending " " " " " " " 2 "

Callisen's method was adopted in 1 case.

The colon was opened in the left loin in 1 case (12).

" " " " twice in same patient in 1 case (12).

" jejunum in left lumbar region in 1 case (63).

" ilium " right " " " 1 " (6).

" cæcum " " iliac " " 1 " (57).

Where the result of the operation was known :—

Recovered, 54.

Died, 23.

Thirteen of the cases that are recorded as fatal, we do not believe should be attributed to the operation, viz., cases Nos. 2, 5, 6, 8, 9, 10, 14, 18, 25, 28, 32, 38, 65.

The shortest period of survival after the operation was 16 hours.

The longest period of survival after the operation was 6 years, and the case was then doing well.

The peritoneum was stated to be wounded in 7 cases, of which 4 died ; one of these, however, revealed no peritonitis at the *autopsy*, and 3 recovered.

The operation was done for vesico-intestinal fistula, with or without stricture of the rectum, in 12 cases, of which 11 recovered from the operation, and one (32) is recorded as fatal, though he evidently did not die from the operation.

The shortest period of survival after the operation was 3 weeks.

" longest " " " " " " " 2½ years.

Where obstruction of the bowel was caused by the presence of tumours, there are 3 cases, of which 2 recovered, and the result in 1 is not stated.

The period of survival after the operation in these cases was :—

1 case was alive and doing well 15 months afterwards.

1 case was alive 4½ years afterwards ; and in 1 case it is not stated.

A perusal of these cases will show that in a large proportion of them the operation was not done till the vital powers had nearly become exhausted from long-continued suffering, and with this fact taken into consideration, the results of the operation should, we think, be regarded as encouraging.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
1	Female	40	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Feb. 1856	Descending colon, by Amussat's method	Thirty days' obstruction from carcinomatous stricture in the rectum
2	Male	40	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Sept. 1856	Descending colon, by Amussat's method	Ten days' obstruction from carcinomatous stricture in the rectum
3	Male	45	G. R. Henry, Burlington, Iowa, N. Am. Medico-Chir. Review, vol. i.	Dec. 10, 1856	Descending colon, by Amussat's method	Stricture of rectum
4	Male	28	Mr. Solly, Lancet, vol. i., 1856	March 15, 1856	Descending colon, by Amussat's method	Stricture of rectum four inches above anus
5	Male	49	Mr. Erichsen, Lancet, vol. i., 1857	Nov. 19, 1856	Descending colon, by Amussat's method	Cancerous disease of rectum, had been suffering with rectal trouble for four years
6	Male	Not given	Jobert (de Lam balle), Lancet, vol. i., 1857	April, 1857	Ilium, in right lumbar region, by Amussat's method	Intestinal obstruction
7	Male	49	Mr. Solly, Lancet, vol. i., 1857	October 1, 1857	Descending colon, by Amussat's method	Stricture of rectum two inches above the anus, had existed for eighteen months, total obstruction for three days
8	Female	56	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Jan. 1859	Descending colon, by Amussat's method	Thirty days' obstruction from carcinomatous disease at the upper part of the rectum
9	Female	39	Sir Henry Thompson, Lancet, vol. i., 1859	March 13, 1859	Descending colon, by Amussat's method	Constipation for forty-one days. Stricture
10	Female	48	Thomas Bryant, Lancet, vol. i., 1860	October 6, 1859	Descending colon, by Amussat's method	Stricture of rectum, absolute constipation for 3 weeks
11	Male	45	N. Ward, London Hosp. Repts., vol. ii.	Aug. 1860	Descending colon, by Amussat's method	Carcinoma of rectum, and severe suffering caused by fecal discharges
12	Male	Not given	John Hilton, Guy's Hosp. Repts., vol. xiii., 1868	Nov. 15, 1860; Feb. 1861	Colon opened in the left loin, feces passed per anum, after a slough came away, wound closed, and eleven weeks afterwards bowel was opened in the left lumbar region	Stricture eight inches from anus, not cancerous, and obstruction to feces
13	Male	60	Mr. Adams, London Hosp. Repts., vol. ii.	Dec. 1861	Descending colon, by Amussat's method	Carcinomatous stricture at upper part of rectum, 18 days' obstruction
14	Female	52	Mr. Critchett, Lond. Hosp. Repts., vol. ii.	Aug. 1862	Descending colon, by Amussat's method	Carcinomatous stricture of the rectum, seventeen days' obstruction
15	Female	36	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Feb. 1863	Descending colon, by Amussat's method	Painful cancerous tumour in rectum, communication with vagina, and five days' obstruction
16	Male	Not stated	Henry B. Sands, N. Y. Med. Journal, April and Dec. 1865	Dec. 26, 1864	Descending colon, by Amussat's method	Chronic intestinal obstruction following dysentery, stricture opposite promontory of the sacrum
17	Male	29	T. B. Curling, Lond. Hosp. Repts., vol. ii.	July, 1864	Descending colon, by Amussat's method	Painful cancerous stricture of rectum
18	Male	27	Mr. Durham, Lancet, vol. ii., 1864	August 23, 1864	Right colon, by Amussat's method	Cancerous constriction of ascending colon
19	Male	33	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Not given	Descending colon, by Amussat's method	Intractable stricture of rectum one and a half inches above anus
20	Male	53	T. B. Curling, Lond. Hosp. Repts., vol. ii.	April, 1865	Descending colon, by Amussat's method	Painful cancerous stricture of rectum

Result.	Period of survival.	Cause of death and remarks.
Recovered	2 months	Wound healed in five weeks. From exhaustion consequent on the disease.
Fatal	13 days	Exhaustion from persistent vomiting produced by chloroform.
Fatal	10 days	Third day after operation had severe venous hemorrhage from the wound (came from a portion of cellular tissue around the kidney though that organ was uninjured), two days elapsed before he rallied from the loss of blood; died from exhaustion.
Recovered	Not stated	Was preceded by diarrhoea and dysentery for some months before the operation, obstruction would not admit a small elastic catheter.
Fatal	3 days	Exhaustion, advanced granular degeneration of the kidneys.
Fatal	Following day	Autopsy showed that the opening had been made in the lower part of the ilium and that the knuckle of bowel was already adherent to the lips of the wound. Cause of obstruction supposed to have been due to an unusual distension of the sigmoid flexure, by means of which the bowel had turned upon itself and formed a fold, which presented an obstacle to the course of the fecal matter.
Recovered	Nearly 6 weeks	Upon hearing some bad news he fainted, then fell into a state approaching collapse in which he died November 12.
Fatal	16 hours	Peritonitis, which had set in before operation.
Fatal	3 days	Ulceration and perforation of colon above the seat of a stricture, which was at the sigmoid flexure. No appearance of its being malignant. Patient was about five months pregnant, miscarried the second night after the operation.
Fatal	13 days	Inauition, was relieved from all pain by the operation.
Recovered	8 months	Exhaustion from extension of disease.
Recovered	9 months	Exhaustion.
Recovered	2 years & a half	From exhaustion consequent on the disease.
Fatal	3 weeks	Exhaustion.
Recovered	3 months	Exhaustion consequent on disease.
Recovered	Less than 4 months	Died night of May 1, 1864. On 3d of March he again entered the N. Y. Hospital with symptoms pointing to obstruction above the artificial opening. Autopsy showed that the symptoms patient suffered from were due to tubercular peritonitis. No ulceration of mucous coat of the colon was present. Calibre of small intestines were narrowed, but nowhere was there complete obstruction. In some places they were so constricted as to give passage only to a full-sized steel sound. The large intestine, with exception of the lower part of sigmoid flexure and rectum, was but slightly thickened and its calibre was normal.
Recovered	9 months	Exhaustion consequent on the disease.
Fatal	6 days	Exhaustion from long-continued disease, was greatly relieved by the operation.
Recovered	Six years, was alive when the case was reported	There was a great tendency for a time to suppuration about the wound. On the twenty-third day after the operation a slough was seen at the deepest part of the wound, it was drawn out and measured five inches long by two inches in breadth, and was found to be a portion of the gut itself, probably some of the sigmoid flexure.
Recovered	5 weeks	Exhaustion from rapid advance of disease.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
21	Male	26	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Feb. 14, 1865	Descending colon, by Amussat's method	Intractable stricture of rectum
22	Female	29	T. B. Curling, Lond. Hosp. Repts., vol. iv.	April 4, 1865	Descending colon, by Amussat's method	Intractable stricture and ulceration of rectum
23	Male	51	Timothy Holmes, Med.-Chir. Trans., vol. xlix; Lancet, April 14, 1866; Lancet, June 19, 1867	June 17, 1865	Descending colon, by Amussat's method	Patient suffered from symptoms of obstruction of the bowels for four years, also recto-vesical fistula
24	Male	46	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Sept. 1865	Descending colon, by Amussat's method	Obstruction of rectum from a hard solid growth which appeared to spring from the prostate. Bowels had not been moved for twenty days
25	Female	68	T. B. Curling, Trans. Lond. Path. Soc., vol. xvii., 1866	Nov. 14, 1865	Descending colon, by Amussat's method	Colloid cancer of rectum
26	Female	41	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Dec. 1865	Descending colon, by Amussat's method	Cancer of rectum
27	Male	42	Mr. Pemberton, Med. Times and Gaz., July 8, 1865	Not given	Descending colon, by Amussat's method	Scirrhus of rectum and both orifices of stomach
28	Female	47	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Jan. 12, 1866	Descending colon, by Amussat's method	Obstruction from carcinomatous stricture of colon
29	Male	20	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Jan. 31, 1866	Descending colon, by Amussat's method	Painful cancer of rectum
30	Female	43	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	March 26, 1866	Descending colon, by Amussat's method	Cancer of rectum and vagina
31	Male	54	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	May, 1866	Descending colon, by Amussat's method	Cancer of rectum and ulceration into bladder
32	Male	52	C. F. Maunder, Lond. Hosp. Repts., vol. iv.	August 21, 1866	Descending colon, by Amussat's method	Cancer of rectum and recto-vesical fistula
33	Male	35	Geo. C. Blackman, Cincinnati Journ. of Med., Jan. 6, 1866	Oct. 15, 1866	Descending colon, by Amussat's method	Cancer of rectum, constipation for ten days
34	Male	34	R. B. Carter, London Hosp. Repts., vol. iv.	Nov. 6, 1866	Descending colon, by Amussat's method	Cancer of rectum
35	Female	54	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Feb. 1867	Descending colon, by Amussat's method	Obstruction, supposed to be due to cancer of sigmoid flexure
36	Male	49	Thos. Bryant, Brit. and For. Med. Chir. Rev., vol. xliii., 1869	April 27, 1867	Descending colon, by Amussat's method	Vesico-intestinal fistula
37	Female	46	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Sept. 1867	Descending colon, oblique incision, as done by Mr. Bryant	Cancer of rectum, constipation for thirty-five days
38	Male	70	Mr. Trevor, Lancet, Nov. 16, 1867	Sept. 31, 1867	Descending colon, by Amussat's method	Stricture of sigmoid flexure, not cancerous. But little had passed the bowels for a fortnight
39	Female	24	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Nov. 1867	Descending colon, oblique incision, as done by Mr. Bryant	Venereal stricture of rectum
40	Male	58	M. Verneuil, Med. Times and Gaz., September 4, 1869, Lariboisière Hosp.	Aug. 1869	Sigmoid flexure, left groin one inch above Poupart's ligament	Stricture and ulceration of rectum
41	Male	64	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Feb. 11, 1868	Descending colon, by Amussat's method	Cancer of rectum

Result.	Period of survival.	Cause of death and remarks.
Recovered	Alive Feb. 22, 1867, 2 years	Successfully relieved.
Fatal	8 days	Exhausted from persistent vomiting, probably due to chloroform.
Recovered	16 months	Was in good health and in a condition of tolerable comfort, with evidence of considerable contraction, if not complete closure, of the fistula. (<i>Lancet</i> , April 14, 1866.) Died Oct. 1866. (<i>Lancet</i> , June 19, 1867.) He died from disease in the cæcum similar to that he had in the sigmoid flexure, for which the operation was performed. About fifteen months after the operation feces again appeared in the urine. The opening from the sigmoid flexure into the bladder was not from malignant disease, but, as far as could be determined, from ordinary ulceration; the same action had taken place in the cæcum, and thus the operation from that time was rendered nugatory.
Recovered	4 years & 6 months	Exhaustion and involvement of the bladder in the disease. For quite four years was in considerable comfort.
Fatal	11 days	Exhaustion. At the time of operation her symptoms were most urgent. She rallied well from the operation and took abundance of food, went on well till the eighth day when she began to sink. All her symptoms were relieved by the operation.
Recovered	3 months & 2 weeks	Exhaustion from spread of disease; wound in loin did not heal kindly. Great relief from pain.
Fatal	Till the following day	Exhaustion.
Fatal	6 days	Exhaustion, obstruction had lasted for twelve days. Owing to a deformity of the spine the operation had to be modified.
Recovered	10 months	Exhaustion and progress of disease. Sufferings greatly relieved.
Recovered	19 months	Exhaustion. Was greatly relieved and could attend to her household duties.
Recovered	10 weeks	Exhaustion from spread of disease. In this case only temporary relief could be expected, and this was certainly realized.
Fatal	16 days	Exhaustion. Did not expect to prolong life longer; operation relieved his symptoms.
Recovered	Doing well three months after the operation	Patient was a colored man; he was relieved from pain and gained flesh.
Recovered	16 months & 5 days	Operation performed by aid of ether spray, patient sitting down and leaning over the back of a chair.
Recovered	9 weeks	Exhaustion. Had no acute pain but a low form of peritonitis set in after the operation, and she took but little nourishment. Autopsy showed considerable narrowing of the gut, together with a nearly circular ulcer one inch and an eighth in diameter, situated ten inches from the anus. It did not appear to be cancerous.
Recovered	4 months	June 29, another opening into the bladder took place, this from the small intestine, and the old symptoms came on and he died from exhaustion. The opening from the rectum that had been present had healed.
Recovered	5 months & 1 day	Exhaustion from spread of disease. During latter days of her life suffered greatly from vomiting.
Fatal	7 days	Pneumonia. Was in a wretched condition and had vomited blood before the operation.
Recovered	Was well at time of report, 3 years	Four months after operation had gained ten pounds. The ulceration of the bowel which had been present was healed. Stricture round and tight.
Fatal	30 hours	Died in a typhoid state. Autopsy showed no peritonitis, there was a slight twisting of sigmoid flexure.
Fatal	11 days	Erysipelas of wound and back.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
42	Male	49	Thomas Bryant, Med. Times and Gaz., Feb. 1868	April 27, 1868	Descending colon, by Amussat's method	Vesico-intestinal fistula
43	Male	59	Mr. Maunder, Brit. Med. Journ., March 6, 1869	July 10, 1868	Descending colon, by Amussat's method	Vesico-intestinal fistula
44	Male	26	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Nov. 1868	Descending colon, by Amussat's method	Stricture of rectum and ulceration
45	Female	40	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	Feb. 2, 1869	Descending colon, by Amussat's method	Stricture of rectum, pain and difficulty in defecation
46	Female	64	Prescott Hewett, Lancet, April 24, 1869	Apr. 7, 1869	Descending colon, by Amussat's method	Obstruction from cancer of rectum
47	Male	Not stated	Mr. Paget, Lancet, June 11, 1870	June, 1869	Descending colon, by Amussat's method	Malignant disease of rectum
48	Male	64	Thomas Bryant, Trans. Clin. Soc. of London, vol. v., 1872	August, 16, 1869	Descending colon, by Amussat's method	Recto-vesical fistula
49	Female	Not stated	John Couper, Brit. Med. Journ., Nov. 20, 1869	1869	Descending colon, by Amussat's method	Stricture of rectum three and a half inches from anus, produced by an abscess of the ovary, five years' standing
50	Male	Not stated	Mr. Callender, Lancet, Nov. 27, 1869	1869	Descending colon, by Amussat's method	Cancer of rectum, sudden obstruction
51	Not stated	50 to 60	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Malignant stricture of rectum, complete obstruction for many days, with <i>vesico-intestinal fistula</i>
52	Female	50 to 60	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Non-malignant ulceration high up, with <i>vesico-intestinal fistula</i>
53	Female	68	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Tumour high up in rectum, producing complete obstruction for ten or twelve days
54	Male	34	G. W. Callender, Trans. Clin. Soc. of London, vol. iii., 1870	Sept. 6, 1869	Descending colon, by Amussat's method	Cancerous stricture of rectum two inches above the anus, with obstruction of the bowels
55	Male	Not given	Mr. Maunder, Med. Times and Gaz., Jan. 15, 1870	Dec. 27, 1869	Descending colon, by Amussat's method	Malignant disease of rectum, partial obstruction
56	Female	Not given	Mr. Maunder, Med. Times and Gaz., Jan. 15, 1870	..	Descending colon, by Amussat's method	Painful malignant disease of rectum, with not unfrequent hemorrhages, partial obstruction

Result.	Period of survival.	Cause of death and remarks.
Recovered	4 months	Operation gave great relief, urine became clear. June 20. Abdominal pain came on in region of the bladder and some constitutional disturbance. June 25. Symptoms relieved by a sudden rush of feces into the bladder and their passage with the urine, feces were thin and evidently from the small intestine. From this time he sank and died August 27. Autopsy showed that the bladder and large and small intestine communicated with an abscess at the base of the bladder, and all signs of ulceration of the rectum, which formerly existed, had disappeared, with exception of the fistulous opening into the abscess. Left kidney disorganized and full of greenish pus, as were the ureter and bladder.
Recovered	6 weeks	Exhaustion, result of previous suffering he had endured months before coming under Mr. M.'s observation; he had suffered from diarrhoea for months and was greatly emaciated; pain intolerable, more especially on micturition. Operation gave the greatest possible relief from his suffering. Autopsy showed a large but simple ulcer at lower part of sigmoid flexure, and in the centre of it a small perforation communicating with the bladder. It was regretted that the operation had not been performed before the vital powers were worn out by the agony which this man had evidently endured.
Recovered	9 months	Was very much better for six or seven months, then had a severe hæmoptysis after catching cold, and died of phthisis.
Recovered	Reported a few days after operation	Wound found to have healed around the artificial opening on the third day.
Recovered	2 weeks after operation was going on most favourably	At time of operation there was stercoraceous vomiting. Colon found much contracted; complete relief by operation.
Recovered	One year, afterwards well	Mr. Paget remarks, in connection with this case, that since the feces had been no longer subjected to the influence of the rectum, morphia had completely lost its power of constipating, so the patient could enjoy this drug without becoming constipated.
Recovered	2 years & 6 months after was well	Suffered but little inconvenience from the artificial anus. No evidence of disease beyond the fistula, which gives no trouble.— <i>Med. Times and Gaz.</i> , March 16, 1872.
Fatal	40 hours	Vomiting from chloroform. Mr. Couper remarks that chloroform vomiting has been hitherto a not unfrequent cause of death after colotomy, and states: Mr. Curling records a case fifteen days after the operation, and that it has also happened to Mr. Maunder. He supposes it to be due to proximity of colon and stomach to the solar plexus, both receiving nerves from this source, and the laying open of the great gut and traction upon it causes reflex irritability of the stomach. In this case the peritoneum was opened during the operation but at once closed. No peritonitis found after death.
Recovered	2 months, after was doing well	All urgent symptoms removed, and entire relief from great local pain from which he had suffered.
Recovered	A few weeks	Exhaustion.
Recovered	A few weeks	Exhaustion.
Recovered	15 months after operation was alive	Nearly twelve months after was in fair health, nothing had passed per anum since operation. Fifteen months after operation was alive.— <i>Med. Times and Gaz.</i> , Jan. 15, 1870.
Recovered	2 months, afterwards health was greatly improved	Pain relieved.
Recovered	5 months & 8 days	Uræmic convulsions. Depth of wound was very great. He believes he wounded the peritoneum, as something like omentum protruded, replaced this and tied the wounded peritoneum up like you tie an artery, then, by dividing the quadratus lumborum and erector spinæ muscles the colon was found. Artificial opening contracted considerably by the sprouting up of muscular tissue around the wound. This was treated successfully by the actual cautery.
Recovered	Not stated	The lower portion of the kidney embarrassed the operation.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
57	Male	43	L. Thomas, Gaz. des Hôpitaux, No. 70, 1869	..	Cæcum (Finé)	Occlusion of the colon, with obstruction for 33 days
58	Male	23	Dr. Thomas B. Bott, Brit. Med. Journ., Nov. 19, 1870	Feb. 21, 1870	Descending colon, by Amussat's method	Intestinal obstruction, due to an injury about the anus from the handle of his spade, which he had fallen against in the summer of 1868
59	Female	57	Thos. Bryant, Lancet, June 11, 1870	May 31, 1870	Descending colon, by Amussat's method	Cancerous stricture of rectum two inches above anus
60	Male	49	Thos. Bryant, Med. Times and Gaz., March 16, 1872	July 5, 1870	Descending colon, by Amussat's method	Recto-vesical fistula
61	Female	Not stated	Mr. Wheelhouse, Brit. Med. Journ., Nov. 12, 1870	Oct. 27, 1870	Descending colon, by Amussat's method	Obstruction of bowels for three weeks, due to presence of a uterine tumour upon the rectum
62	Female	Not stated	C. Heath, Medical Times and Gaz., March 4, 1871	Feb. 4, 1871	Descending colon, by Callisen's method	Malignant stricture of rectum, absolute obstruction had been present for a week
63	Female	39	Erskine Mason	May 8, 1871	Jejunum, by Amussat's method	Venereal stricture of rectum
64	Female	61	Erskine Mason	May 27, 1871	Descending colon, by Amussat's method	Cancer of rectum, uterus, and vagina
65	Female	56	Mr. Savory, Lancet, May 27, 1871	1871	Ascending colon, by Amussat's method	Malignant stricture eight inches above anus
66	Male	58	Mr. Savory, Lancet, May 27, 1871	1871	Descending colon, by Amussat's method	Rectum obstructed by a soft mass, on one side of which a small aperture could be felt
67	Female	37	Erskine Mason	June 12, 1871	Descending colon, by Amussat's method	Cancer of rectum
68	Female	54	Z. E. Lewis, Communicated	July 26, 1871	Descending colon, by Amussat's method	Occlusion of rectum from cancer extending from uterus
69	Female	32	Henry B. Sands, Communicated	Aug. 7, 1871	Descending colon, by Amussat's method	Cancerous stricture of rectum
70	Male	38	Thos Bryant, Med. Times and Gaz., June 15, 1872	Oct. 10, 1871	Descending colon, by Amussat's method	Stricture of rectum
71	Male	47	Mr. Howse, Medical Times and Gaz., Oct 26, 1872	Nov. 10, 1871	Descending colon, by Amussat's method	Epithelioma of rectum
72	Female	Not stated	C. Heath, Medical Times and Gaz., May 17, 1873	Jan. 1872	Descending colon, by Amussat's method	Recto-vesical fistula, result of puerperal abscess
73	Male	41	Mr. Maunder, Med. Times and Gaz., Feb. 24, 1872	Jan. 26, 1872	Descending colon, by Amussat's method	Malignant stricture of rectum
74	Female	25	Mr. Maunder, Med. Times and Gaz., Feb. 24, 1872	Jan. 31, 1872	Descending colon, by Amussat's method	Venereal stricture of rectum
75	Female	25	Mr. Hulke, Lancet, July 20, 1872	March 6, 1872	Descending colon, by Amussat's method	Venereal stricture of rectum
76	Male	Not stated	Mr. Hulke, Lancet, August 3, 1872	June 5, 1872	Descending colon, by Amussat's method	Carcinoma of the rectum
77	Male	52	Charles Steele, Med. Times and Gaz., 1872	June 6, 1872	Descending colon, by Amussat's method	Intestinal obstruction
78	Male	26	Erskine Mason	June 26, 1872	Descending colon, by Amussat's method	Intractable stricture of rectum
79	Female	42	Erskine Mason	Jan. 27, 1873	Descending colon, by Amussat's method	Cancerous stricture of rectum
80	Male	..	Erskine Mason	May 12, 1873	Descending colon, by Amussat's method	Stricture of rectum, ulceration, and recto-vesical fistula

Result.	Period of survival.	Cause of death and remarks.
Recovered	..	Had had dysentery when 15, and had frequent attacks of colic and constipation.
Recovered	8 months, after operation was well	.....
Recovered	Not stated	Operation done to relieve pain.
Recovered	1 year & 6 months after operation he was well	Had been passing urine and feces through the urethra for three years, and was much reduced in health, and most miserable from local pain. Was out four weeks after operation. Six months later reported he was getting fat and free from all pain.
Not stated	..	.....
Not stated	..	Had advised colotomy a long time before, but patient did not accept it.
Fatal	4 days	Erysipelas and uremia. See case No. 1 in this paper.
Recovered	3 months	See case No. II. in this paper.
Fatal	2 days	Exhaustion. Had suffered from constipation for sixteen days and from vomiting for about fifteen days. Obstruction thought to be in colon at time of operation.
Recovered	Not stated	Was discharged from St. Bartholomew's Hospital on the twenty-sixth day in a good condition.
Fatal	5 days	Septicæmia. See case III. in this paper.
Recovered	4 months & 5 days	Peritonitis from extension of disease. No autopsy obtained. Operation gave immediate relief to her symptoms and subsequent comfort so far as action of the bowels was concerned.
Recovered	About six months	Pain and exhaustion. Patient had but one fecal evacuation in ninety days preceding the operation. Suffered intense pain before the operation from fecal accumulation. The intestines were greatly distended and their outlines could be seen through the attenuated abdominal walls. Operation afforded marked temporary relief.
Recovered	..	.....
Recovered	..	Oct. 13, 1872. Was still living and expressed himself thankful for the relief afforded by the artificial opening.
Recovered	16 months	Was in good health at time of report.
Fatal	43 hours	Exhaustion. Patient was very far gone at time of operation. Operation relieved his symptoms. No autopsy obtained.
Recovered	..	Was doing well Feb. 18, 1872.
Fatal	7 days	Peritonitis. Peritoneum was opened in the operation. Autopsy showed diffuse suppuration between the oblique muscles, extending upwards on lower ribs and over front of the belly to groin, downwards along psoas and iliacus muscles, sub-peritoneal.
Recovered	..	.....
Recovered	..	.....
Recovered	Alive a year after operation	See case IV. in this paper.
Fatal	..	Pneumonia and peritonitis. See case V. in this paper.
Recovered	3 weeks	See case VI. in this paper.

In order to give a more complete *résumé* of the operation of colotomy, we append the following tables from Mr. Hawkins's 44 cases, which are taken from his paper.

Of these 44 cases of artificial anus, it is known that

6 died within the first 24 hours.				
11	"	"	"	48 "
13	"	"		one week.
17	"	"		a fortnight.
19	"	"		3 weeks.
21	"	"		5 weeks.

So that only 23 patients can be considered as having recovered from the operation; but as the operation in one case was performed for the cure of fistulæ in ano, in which, therefore, the dangers of protracted constipation were absent, it will be fair to state, that there were 21 deaths and 22 recoveries. But let us trace the 22 recoveries a little further; first, we find that 5 died within six months, viz. :—

1	in 2 months.
1	in 3 "
1	in 3½ "
1	in 5 "
1	in 6 " and 10 days.

Eight are either alive or are left uncertain under a year, viz. :—

1	reported for 2 months; cancer making progress.
1	" " 2½ " " of omentum or colon.
1	" " 6 "
1	" " 8 "
1	" " uncertain.
1	alive at present, 6 months.
1	" " 7 "
1	" " 10 "

And therefore only 9 survived for about one year, or upwards, of whom

1	died in rather less than a year.
1	" " 14 months.
1	" " 21 "
1	" at the end of 3 years.
1	was alive nearly 3 years, in 1842.
1	is now alive 14 months.
2	are now alive about 2 years.
1	lived for 17 years.

Of 43 patients, whose sex is recorded, 22 were females and 21 males; and of the 21 early deaths, 11 were females and 10 males; so that neither the frequency of the diseases for which the operation is required, nor the result of the operations, is influenced by the sex. The age of 43 patients varied from 21 to 67 or 70.

It might reasonably be expected that the nature of the disease for which the artificial anus is made, would much affect the success of the operation. These diseases were :—

In 15 cases, stricture of rectum and sigmoid flexure of colon, believed to be not cancerous.

In 3 cases, stricture of ascending or transverse colon, also believed to be non-malignant.

In 1 case, twist of colon at upper part of ascending colon.

In 1 " adhesion of rectum to uterus from inflammation.

In 1 " strangulation of ileum by a band.

In 1 " fistulæ in ano.

In 1 " adhesion of ileum and rectum to cancerous uterus.

In 17 cases, cancer of rectum and sigmoid flexure of colon.

In 1 case, cancer of sigmoid flexure of colon or omentum.

In 1 " stricture of cæcum, with scirrhus of its coats from injury.

In 2 cases, unknown.

Of the 21 cases which did not recover from the operation, the assigned causes of death were:—

In 1 case, 2 lbs. of mercury given previously, dragging the ileum into the pelvis (cancer; died in 28 days).

In 1 case, unrelieved, the obstruction being above the opening (died in 12 hours).

In 1 case, fecal evacuations incomplete (died in 8 days).

In 5 cases, exhausted by the disease (died in 12 hours; died in 12 hours; died in 36 hours, cancer; died in 9 days, cancer; died in 17 days, cancer).

In 4 cases, structural changes produced by the disease, viz., *a*, cæcum burst, and fecus escaped into pelvis (died in 6 days).

b, Ulceration of bowel (died in 28 hours; died in 10 days, cancer).

c, Rupture of 6 inches of peritoneal cord from distension (died in 24 hours).

In 7 cases, peritonitis.

a, Old as well as recent (1 died in 16 days, cancer).

b, From the operation, 2 (1 died in 24 hours; 1 in 28 hours).

c, Begun before the operation (1 died in 5 hours; 1 died in 2 days; 1 died in 5 days).

d, From the cancerous ulcer (died in 14 days).

In 1 case, unknown, but cancerous (died in 2 days).

In 1 case, chiefly sloughing of sacrum (died in 36 days).

The deaths of 9 patients, who recovered from the operation, have been recorded; of which—

4 cases were cancerous (died in two months of phthisis; died in 3½ months of the disease and dropsy; died in 5 months of the disease; died in 1 year of the disease).

5 cases were stricture of colon or rectum not cancerous (died in 3 months; died in 6 months; died in 14 months; died in 21 months, all from the disease; 1 died in three years, probably of the disease).

There are now living, or were alive at last report, 13 cases, of which—

4 cases were cancerous (2 months, cancer making progress; 2½ months, in good health; 2 years, still alive; 3 years nearly, cancer not making much progress).

7 cases stricture of colon, or rectum, not cancerous (6 months, in good health; 6 months, apoplexy; 4 months, after operation; 7 months, in good health; 10 months, in good health; 1 year, in good health; 2 years; 17 years).

2 cases, disease unknown (8 months, in good health; time and date uncertain).

Table of operations through the peritoneum; 17 cases.

In cæcum, 3 cases (died in 12 hours; died in 24 hours; died in 28 days).

In small intestine, 2 cases (died in 12 hours; died within two days).

In right colon, 1 case (died in 24 hours).

In transverse colon, 1 case (died in 3½ months).

In left colon, 9 cases (died in 12 hours; died in 48 hours; died in 8 days; alive now, 7 months; lived above 6 months; died in 1 year; alive now, 13 months; alive above 4 years; lived 17 years).

In both right and left colon, left external to, and right through the peritoneum, 1 case (died in 28 hours).

Total, 10 died; 7 recovered.

Table of operations external to the peritoneum, 27 cases.

In right colon, 6 cases (died in 5 days; died in 10 days; alive 2½ months; died in three months; alive 8 months; died in 3 years).

In left colon, 20 cases (died in 5 hours; died in 12 hours; died in 36 hours; died in 6 days; died in 9 days; died in 14 days; died in 16 days; died in 17 days; died in 35 days; total, 9 in 5 weeks; died in 2 months; alive 2 months, cancer; died in 5 months; alive now, six months; died in 6 months; alive now,

8 months; died in 14 months; died in 21 months; alive now, 2 years; alive nearly three years); (total 11, lived above 5 months).

Uncertain which side, 5; 1 case recovered.

Thus of both sides there died within 5 weeks, 11; recovered, 16=27.

Of right colon, died 2; recovered, 4=6.

Of left colon, died, 9; recovered, 11=20.

113 WEST 44TH STREET, July, 1873.

ART. III.—*Cases of Excision of the Supra- and Infra-orbital Branches of the Trifacial, of the Perineal, External Popliteal, and Posterior Tibial Nerves, etc. etc.* By THOMAS G. MORTON, M.D., Attending Surgeon of the Pennsylvania Hospital and Wills (Ophthalmic) Hospital, etc. etc., Philadelphia. (With a wood-cut.)

THE publication of the following cases has been deferred some considerable time, in order that the results of the operations which have been performed, whether beneficial or otherwise, might be more certainly determined. In almost all instances this is desirable, but more especially is this the case after operations for neuralgias and nerve affections generally.

In several of the cases detailed some years have elapsed since the nerves were excised, and the results in those instances may be considered as probably permanent. With two exceptions, the following operations were for the relief of intense long-standing neuralgias, the other cases of nerve excisions were undertaken for blepharo and blepharo-facial spasms unaccompanied by neuralgia.

The method of reaching the infra-orbital nerve varied in each of the three cases. In the first the antrum was trephined, and the nerve removed without disturbing the orbit, but long-continued and excessive suppuration followed with some slight necrosis; the ultimate result was, however, eminently satisfactory.

In the second case the nerve was reached on the floor of the orbit; a small triangular section of bone, between the foramen and the rim of the orbit was removed with the bone forceps, the base corresponding to the orbital edge; the diverging filaments of the nerve were then collected and the main trunk with these removed, about an inch and a half within the canal; in this case the wound was well in six weeks.

In the third case, after the usual incisions and the lower edge of the orbit was reached, the eye and the adjacent soft parts were pressed upward from the orbital floor, the nerve canal was punctured far back, and the very delicate bony covering was then broken up anteriorly the full extent.

This method is the simplest, the least severe operation, and insures the most rapid recovery.

Finding some difficulty in my first case in securing completely the main nerve trunk as it lies in the canal, I devised the blunt hook shown in the wood-cut, and in the succeeding cases found it very useful—after opening the roof of the nerve canal, the hook was carried under the cord, and with traction backward and forward the roof was broken away with ease, while the nerve was quickly separated and elevated before its division. After the excision of the infra-orbital branch of the fifth pair, total facial anæsthesia followed on the excised side in each instance. In the first two cases this has completely vanished with the return of normal sensibility, showing conclusively that permanent paralysis of sensation need not be apprehended after these nerve excisions.

The line bounding the space of skin anæsthesia could be traced in each case along the median line from the root of the nose, downward to and involving half of the upper lip, thence outward from the angle of the mouth about an inch and a half, then directly upward to the external angular process of the orbit.

After the excision of the supra-orbital nerve in the case of blepharospasm there was anæsthesia for five inches above on the nasal, and three inches upward on the temporal side; sensation at the same time existed along the extreme edge of the upper eyelid, and also on its mucous surface. In this case also the natural condition of the skin, now two years since the excision, is returning, the numbness which succeeded the anæsthesia is gradually disappearing.

The results of these operations have been eminently encouraging and satisfactory. In the cases of neuralgia of the face it was not thought necessary to extend the operation, and remove the ganglion of Meckel, for the disease of the nerve seemed located in the infra-orbital, at and about its emergence on the face, while the results in these two cases, after some years, has supported this view; it is true that any trivial excitation, mental or otherwise, was sufficient in these cases to induce an attack of pain, yet repeated examination in the absence of the paroxysms showed that an exquisite degree of sensitiveness was continually present at the place of divergence of the nerve on the face.

It is worthy of note perhaps that the nerves on the left side of the face appear to have been more frequently the subject of excision for neuralgia than those of the right side.

The first case of excision of the infra-orbital nerve was for neuralgia of the most excruciating character, and which had existed for more than fifteen years; there was entire relief for a long time; in fact there has never been any pain at the original seat of suffering. The discomfort the patient now has, he describes, as “a consciousness of suffering or a tendency to it,” while this is confined entirely to the lip and angle of the



mouth; the patient has been vastly benefited and so remains after a period of more than three years since the excision; possibly with the removal of the ganglion of Meckel the relief might have been entire, although in a similar case of neuralgia reported by Mussey,¹ where Carnochan's operation was performed, paroxysms of pain in the temple were experienced after the operation.

The second was a most distressing case of terrible neuralgia which had existed for upward of thirty years; more than two years and a half has elapsed since the nerve excision, and the patient continues perfectly well, and has never had the slightest return of the old malady.

The third case of excision of the infra-orbital was for blepharo-facial spasms without neuralgia, which had lasted for twenty years with a sensitive infra-orbital nerve; the patient was in a miserable condition, and was desirous to undergo any operation which held out the slightest chance for any alleviation. There has been great improvement already, with a daily lessening of the contractions of the muscles.

In the case of blepharospasm, eighteen months of constant use of the eyes (the patient being an active practical farmer) since the supra-orbital nerves were excised, has thoroughly tested the value of the operation.

The excision of the perineal nerve represents a very unusual if not unique operation, while the continued freedom from all neuralgia gives promise of continued success.

In the case of stump-neuralgia, after a Pirogoff amputation, a useful limb has been saved, upon which the patient can sustain his entire weight without any artificial appliance, by the excision, first, of the posterior tibial, and subsequently of the external popliteal nerve.

CASE I. Excision of the trunk of the infra-orbital branch of the fifth pair of nerves, for intense neuralgia of fifteen years' duration.—E. L., æt. 60, residing in Maine, was requested to place himself under my care, by Dr. Isaac Ray, now of this city, early in the month of April, 1870, for a very severe neuralgia of the left side of his face, for the relief of which all the usual remedies had been tried, but without any beneficial result.

Mr. E. L. had just returned from Florida, where he had been spending the winter, hoping that the warm climate might prove of service. He was enfeebled, had a bronchial catarrh, pallid countenance, and a miserable digestion. Opium and alcoholic stimulants were constantly used to insure him a certain measure of relief from the atrocious pain he was so frequently called upon to endure.

The neuralgia was principally located on the branches of the infra-orbital, and the least pressure at the place of this nerve's emergence on the face would bring about the most exquisite suffering.

Excision of the trunk of this nerve was for the first time proposed, and the operation performed early in May, 1870. The ordinary external incisions were made, the antrum was trephined, and fully an inch of the

¹ Am. Journ. Med. Sci., Oct. 1869, p. 594.

nerve removed from a point as far back as possible. Total anæsthesia of the side of the face followed, with absolute relief from the neuralgia.

Considerable suppuration ensued; the patient was much reduced by his temporary confinement; the bronchial catarrh assumed a very severe form, and a large pulmonary abscess formed, and the symptoms became alarming. With the excessive expectoration great wasting occurred; finally he improved, and remaining quite free from all neuralgia, left for his home in the East in the month of July following.

On the 16th of March, 1871, Mr. E. L.'s brother wrote me as follows:—

"After the operation the relief was *entire*, it so remained for two or three months; after that a slight uneasiness began to come on, but no *very acute* pain at any time, though he is seldom without some consciousness of suffering or such a tendency to it, that a careless motion, or any perplexity of the mind would make the presence of the enemy felt; he still holds his own, and more; at least so far as his years and so long and wretched a siege on his strongholds of life would permit. Since the operation he has had *no* pain at the original seat; what he has now is mainly at the lips and around the lower part of the face. He is confident, that, if the operation had been performed earlier and when he was not so much broken down, the cure would have been complete. He is equally confident that without the operation he would not now be living to thank you for the measure of relief afforded."

Jan. 28, 1873. "My brother would have me say that there has been no marked change in his condition that he is conscious of since he wrote you two years ago.

"You ask about the sensitiveness of the skin at present; whether paralyzed or not.

"There is no loss of sensibility now as the *result of operation*. From the first acute attack years ago, the skin has never been in exactly a healthy condition, and the "numbness" of which he has so often spoken is hardly in the skin; indeed the term itself is used for want of any other to describe an indescribable sensation.

"My brother regrets that he cannot well answer your letter with his own hand, writing is one of the things which he is least able to do with safety; and he has always found it best not to provoke a contest with his life's enemy."

CASE II. *Excision of the trunk of the infra-orbital branch of the fifth pair of nerves, for neuralgia of thirty years' duration.*—Mrs. S. S., æt. 61; native of England, was first attacked with neuralgia in 1834; the pain then was looked upon as an ordinary facial neuralgia of severe type, which continued off and on for three months. She experienced attacks during the next two years; was married in 1836, and in this year had some eight attacks of intense pain, which, however, yielded to mild opiates. Yearly attacks were experienced until 1840, when she had a terrific spell; during 1841 and '42 she was confined to bed for eighteen months, and but little benefit was experienced from powerful opiates. In the succeeding year the paroxysms of pain were so fearful that delirium came on, during which the patient would attempt the mutilation of her person. In 1843 she was brought across the Atlantic, and with the use of lactucarium and blue mass the attacks were lessened. In 1844 she removed to the State of Delaware, when the paroxysms again assumed a more violent type, and stimulants in large quantities were used, the amount being gradually increased, as it was found by this means the duration of the spells were lessened. By advice of her physician, in '53 the patient went to England, and some benefit was experienced from the voyage; during a period of six months there was comparatively a freedom from pain. In '54 she was again in bed for six months, and about this time an eminent

physician of this city was consulted, and by his direction all the teeth of the upper jaw were extracted without any good result. The neuralgia continuing, another voyage to England was made in '64, with some benefit, which lasted for several months. From '66 to the time the patient came under my care, there was almost a continuous condition of intense unremitting suffering; it was the same history over again of all these terrible neuralgic cases; for eighteen months prior to my seeing her, the average amount of laudanum taken every week was four ounces, while an ounce each day was no unusual quantity.

January 16, 1871. Mrs. S. was brought to my office, and when I first saw her, it was during an attack of pain, apparently excruciating. I at once used half a grain of morphia under the skin, and no relief appearing the same quantity was again injected in about twenty minutes. Several fearful spells followed in quick succession during the hour she remained under observation.

The pain originated on the left side of the face, apparently about the infra-orbital foramen, and was always located at this point, and thence radiated over the face and head. The nerve at this place was exquisitely sensitive, the least pressure inducing an attack. Either eating, drinking, talking, or swallowing was quite sufficient to provoke a paroxysm. Vision in the left eye was only $\frac{1}{15}$, and not capable of any improvement by glasses. In the right eye there was acquired hypermetropia = $\frac{1}{24}$, with a presbyopia = $\frac{1}{10}$.

Excision of the trunk of the infra-orbital nerve was recommended, and strangely enough had never been suggested or proposed during her thirty years of torture, and so eager was the patient for relief that the operation was at her urgent request performed the following day. After the infra-orbital foramen was exposed, the cutting forceps were applied, and that portion of the edge of the orbit above the foramen was removed, until the canal containing the nerve trunk was reached; passing the hook, p. 393, under the diverging filaments, the instrument was pressed backwards, and the roof of the nerve canal was broken up; the nerve was then excised, about an inch and a quarter being removed. Considerable suppuration ensued, and a small fragment of bone was removed. In six weeks the wound was well. The relief from pain from that time has been entire. There was total anæsthesia of the left side of the face.

August 12, 1873. The patient since the operation, now more than two and a half years, has been ever since *absolutely* free from *all* pain. There is also a complete restoration of sensation on the left side where the nerve was excised. About one year after the operation a feeling of numbness took the place of anæsthesia, this in turn was followed by a very peculiar tingling, more apparent when the skin was rubbed; following this an itching, increased by friction, preceded the return of normal sensitiveness, which latter condition has been observed for about six months. Now and then a drop or so of a clear watery secretion escapes from the left nostril, and is not noticed until it reaches the lip, and occasionally a tear may fall upon the cheek before being noticed as collecting about the eye. This is all the change the patient experiences, as compared with the other side of the face, as a result of the operation.

Vision, which was very much diminished, has since the operation been entirely restored; with a $+\frac{1}{24}$ for distance which overcomes the hypermetropia, and a $+\frac{1}{9}$ for reading, the patient has normal vision with both eyes.

CASE III. *Blepharo-facial spasm of more than twenty years' duration; subcutaneous division of the supra-orbital, and excision of the infra-orbital nerves.*—During the latter part of May of this year, I was consulted by Mrs. I. S., aged 56, of Philadelphia, on account of an almost continuous spasmodic contraction or jerking of all the muscles of the right side of the brow, face, and neck; the intervals of rest being only momentary. The disease first showed itself more than twenty years ago, coming on with a very trifling twitching of the muscles of the cheek; gradually this increased, and in the course of a few years the contractions were so violent that the eyelid was kept firmly closed, the angle of the mouth tensely pulled backward, and the skin of the neck drawn downward with marked elevation. This condition during the past few years has been gradually assuming a more violent form, giving great distress, but never accompanied by the least pain. Years ago all the teeth in the upper jaw were removed, from the supposition that some disease perhaps was lurking at the roots of the teeth unnoticed. This, however, did not give the least relief, and no treatment of any description has ever produced any alleviation of the malady. Her husband informed me that there was no cessation of the jerkings even during sleep, but that after a good night's rest the contractions were not so excessive for an hour or so after rising.

Firm pressure on the infra-orbital nerve produced but trifling control of the spasmodic twitchings, but no effect was evidenced by any pressure made on the supra-orbital or facial nerves; the patient's general health was and has been always excellent.

Drs. Mitchell and Hunt saw this case with me, and it was concluded that the chances for relief from an excision of the supra- and infra-orbital nerves were not at all encouraging, in fact discouraging, not only from the great length of time the disease had existed, the general involvement of the muscles of the face and neck, but also from the fact that the spasms could not be *controlled* by pressure at any point, only a slight impression being produced by the firmest pressure below the orbit, while this gave considerable pain. The case was one in which an operation (experimental it must be) was deemed justifiable, but where even a measure of relief could not be assured. The patient was very anxious for some attempt to be made, and her husband, who was a man of intelligence and wealth, was so impressed with the excellent result in the case (IV.) of blepharospasm, having expressly visited this patient at Huntingdon, Pa., that he determined to have an operation in his wife's case performed.

June 10, 1873. Assisted by Drs. Mitchell, Hunt, and others, I made the ordinary incisions for the removal of the infra-orbital nerve; after reaching the lower rim of the orbit, the soft parts were dissected upward and the floor of the cavity denuded for some distance posteriorly, the roof of the nerve canal was punctured rather more than an inch behind the orbital edge; the blunt hook was then passed under the nerve, and drawing the instrument forward the remaining portion of the roof of the canal was broken away, the nerve was divided as far back as possible, and at least an inch was removed; the supra-orbital was then divided subcutaneously in two places. Before the ether had been removed, while the sutures were being introduced, the twitching of the muscles appeared, but were apparently less severe and not so persistent.

Paralysis of sensation resulted to the same extent as in the other cases of infra-orbital nerve excisions; on the brow and scalp there was simply marked numbness.

August 7. The twitchings are still present, but there is a marked improvement; the spasms are less protracted, and the intervals of rest much longer and a daily subsidence is noticed; sometimes there will be a cessation of the twitchings for more than an hour at a time.

CASE IV. *Severe Blepharospasm of twelve years' duration; excision of both supra-orbital nerves.*—D. H., of Huntingdon, Pa., was advised by his physician, Dr. A. B. Brumbaugh, to consult me—March, 1872—about a severe nervous affection from which he had long suffered. The patient noticed about twelve or thirteen years ago a peculiar nervous twitching of his eyelids and the adjacent muscles, which gradually increased and finally became constant. The spasms of the orbicularis became so excessive and frequent that he was quite unable to attend to any business, and for some months past had been confined to the house, and when attempting to walk around or use his eyes, the lids would be so firmly closed that he had to be led about. No pain had been experienced during the twelve or thirteen years of this distressing malady. The patient had observed that firm pressure on the middle of the eyebrows or on the temples allowed him temporary relief, and he had been constantly in the habit of resorting to this method to secure momentary vision or cessation of the spasms.

The patient was a farmer, quite robust, and in every respect of sound general health; he was about fifty-eight years of age, of a rather spare frame, and never remembered having been sick. The spasms which constantly kept his eyelids firmly closed have always been unattended with the slightest pain; the orbicularis oculi, and the corrugator muscles, as well as those of the face and neck, participated; there was a violent jerking of the head, choreic in character. The marked quivering of the muscles about the mouth, face, and neck had within the last years only been observed. Firm pressure on the supra-orbital nerves controlled the spasms, while pressure on the temple or the infra-orbital nerves materially lessened, but did not control, the twitching. Light seemed to be the exciting cause, for in darkness the muscles relaxed and the patient's rest was undisturbed. With great difficulty I examined his eyes and found normal acuity of vision with a presbyopia = $\frac{1}{16}$; there was no lesion observed with the ophthalmoscope.

A solution of atropia gr. iij to the 3j, was used in each eye morning and evening. Veratria ointment was applied over the brows, and counter-irritation behind the ears, and the artificial leech to the temples.

March 9. Wet cups were applied to the nape of the neck and temple, and room kept darkened, and 15 grains of extract conium, with 5 grains of Vallet's mass, given three times a day with a pint of porter.

13th. Spasms in no way lessened; can scarcely take his meals from the twitching of the face and head, and after consultation with Drs. Mitchell, Hunt, and others, I subcutaneously divided (March 14) the supra-orbital nerve on the right side, and removed more than half an inch of the nerve on the left side.

16th. Has had no spasms of the muscles around the left eye, but the twitching still exists on the right side; bandages firmly applied.

20th. Eyes exposed; total anæsthesia over the brow of the left side; on the right, sensation to some extent exists all over the supra-orbital region, which shows that the subcutaneous operation has not been complete, or that the nerve has re-united.

Since relief was not entire on the 27th, I excised the right nerve in same manner as the excision on the left side, removing rather more than half an inch. After this the cure was complete, the patient being able to bear any amount of light and having, at the same time, perfect control of the lids; on the 4th of April he left the city perfectly well.

Prof. Leidy examined the tissues and reported "of the cords removed, one is a portion of an artery, another a portion of a vein, and two others portions of nerves, and nothing observable of peculiar character."

August, 1873. Mr. H. is in perfect health, and has the entire use of his eyes. In answer to inquiries regarding the condition of the skin of the brows, Dr. Brumbaugh replied as follows:—

"There is still considerable *numbness* of the brow and forehead, extending on the right side from a point on the brow about a quarter of an inch inside the outer edge of the orbit, a little backward and upward (rounding off toward the median line), until it reaches a point about one and a half inch above the frontal prominence, extending almost directly across the head by a similar line on the left side reaching a point about a quarter of an inch outside the outer edge of the orbit. It extends on the nose to a point directly on a line with the inner 'corners of the eyes.' This feeling of *numbness*," he states, "has been gradually passing away."

CASE V. *Vaginal neuralgia of twelve years' duration; excision of the perineal nerve.*—Mrs. S. F., now a resident of this city, 42 years of age, was confined at San Francisco on June 22, 1860; labour was somewhat tedious, but the child was not above average size. The only drawback to a rapid convalescence was a pain described as vaginal, at times quite severe, which was located on the right side of the urethral opening and involved the lesser labia; all treatment during the past years had failed to give any relief. The patient's general health was uniformly good, and her menstrual functions appeared with regularity. The least pressure on the parts, whether from sitting or otherwise, produced an increase of her suffering, and all marital relations were necessarily suspended.

I saw this lady in consultation with Dr. De Young, and found great vaginal tenderness anteriorly on the right side, and some displacement of the uterus, for which pessaries had been used but discontinued from the pain induced by pressure. There had been a laceration of the perineum, and thinking that the prolapsus incident to this might be the cause of the pain, the perineum was freshened and closed up with three superficial and three deep sutures.

No abatement of the neuralgia followed this operation; a seton was then introduced above the groin, and although free suppuration was excited, the pain was in nowise lessened.

October, 1872. On examining again the vaginal walls, and especially the descending ramus of the pubes, I found that the deeper the pressure, the greater the pain, and then for the first time a firm cord was discovered, which could be rolled about under the finger, which was fully as large as, and resembled very much, a spermatic cord; this was painful in the extreme to the touch, and was recognized as the perineal nerve; several examinations were followed by the same results, and since the seat of pain was evidently in this nerve, its excision was advised. After full etherization, a deep vertical incision brought into view the cord, which was removed to the extent of an inch; it proved to be a dense hypertrophied nerve, otherwise not altered in structure; the wound closed up well in a few days.

All distress and pain vanished from the moment of operation.

January 26, 1873. Total anæsthesia has followed at and about the place of operation, extending upon the labial tissues, with a numbness of the adjacent groin surfaces; there has not been any return of pain.

August, 1873. Continues well.

CASE VI. *Neuralgia of stump following a Pirogoff amputation; excision of posterior tibial and external popliteal nerves.*—J. W., a labourer, aged 52, was admitted into the Pennsylvania Hospital on the 19th of August, 1870, with a compound fracture of the right foot; amputation by the Pirogoff method was performed immediately on his admission—an excellent recovery followed, without any undue tension of the cicatrix, and patient was discharged with one or two very small fistulous tracts which closed up eight weeks after his leaving the hospital.

Previous, however, to his discharge, neuralgia in the stump appeared, the pain at times being quite severe; the patient was able to walk and even to bear his entire weight on the stump, yet each step was accompanied by pain, referred principally to the great toe, with a sensation of the toe's being puckered up or tied in a knot; pain was also located in the little toe and slightly in each of the others.

This neuralgic condition prevented the man from engaging in any work, and in the month of August, 1871, he sought admission again for the purpose of a re-amputation. The tissues around the cicatrix in front of ankle were found very tender, the heel being in a normal condition, and apparently no bulbous condition of the nerves existed, the stump was an exceedingly perfect one, and I declined to amputate the leg, but consented to excise the posterior tibial nerve. An incision was made just above the ankle and an inch of the nerve was removed, which was found much enlarged and thickened. This materially relieved the pain in the stump, but not entirely; the cicatrix remained very sensitive. After this the tissues covering the cicatrix were divided down to the bone, with no relief.

In December following the patient re-entered the hospital, and I excised rather more than an inch of the external popliteal nerve on the edge of the biceps tendon. A rapid recovery followed this last operation, without an unpleasant symptom, and the patient was discharged quite well; he had an excellent useful stump, long enough to walk without any artificial appliance, and was able to bear, without the least discomfort, his entire weight upon it.

Since his discharge he has been free from all pain.

There is total anæsthesia of the stump and partial of the limb.

CASE VII. *Neuralgia in stump; bulbous extremities of the nerves; re-amputation.*—J. W. C., aged 24, was admitted into the Pennsylvania Hospital October 12, 1865, for intense neuralgic pains in his stump.

His right foot was shattered by a shell at the siege of Richmond, September 29, 1864, and amputation of the leg was performed on the battlefield, a few hours after the injury. On the 21st day the stump, which was doing well, began to slough, and considerable loss of skin resulted; supuration continued for several months, and during this period pain became a prominent symptom with marked twitching of the muscles. The flap operation had been performed; the cicatrix was irregular, with a general transverse direction, and the integument was firmly attached to the ends of the bones.

Small painful nodules were found at the extremity of the stump on either side, under pressure exquisitely sensitive.

October 14. The skin was dissected up, the patient being under the influence of nitrous oxide gas, lateral oval flaps were made, and a circular division of the muscles. The anterior tibial and peroneal nerves after division were well drawn down and severed high in the sheath.

November 25. Was discharged with an excellent stump and with no return of the neuralgia.

Report of Dr. MORRIS LONGSTRETH, who examined the portions of nerves removed.

The specimen shows the integument covering the end of the stump contracted in a puckered cicatrix, and is marked with deep furrows. The integument is tightly adherent to the bones, and its connection with the muscles consists of firm bands of connective tissue. The tibia and fibula are evenly rounded, with their extremities, perhaps, unduly enlarged. The nerve trunks, viz., the posterior tibial and both branches of the peroneal, are all enlarged, and terminate in bulbous extremities which are adherent to the cicatrix by dense fibrous tissue.

Microscopic examination of the enlarged portion of the nerves showed them to be composed mainly of fibrous tissue, a few nerve fibrils only passing through them. For a short distance above the bulbous extremities the fibrous tissue in the nerve trunk was much increased.

The following are the measurements of the nerve trunks in their healthy portions and of their bulbous extremities.

The branches of the external popliteal or peroneal nerve.

I. Anterior tibial branch:				
Diameter	of the healthy portion	.	.	$\frac{1}{8}$ inch.
"	" bulbous enlargement	.	.	$\frac{1}{4}$ to $\frac{1}{2}$ inch.
Length	" " "	.	.	$\frac{2}{3}$ inch.
II. Musculo-cutaneous branch:				
Diameter	of the healthy portion	.	.	$\frac{1}{8}$ to $\frac{1}{6}$ inch.
"	" bulbous enlargement	.	.	$\frac{1}{3}$ inch.
Length	" " "	.	.	nearly 1 inch.
III. Posterior tibial nerve:				
Diameter	of the healthy portion	.	.	$\frac{1}{4}$ inch.
"	" bulbous enlargement	.	.	$\frac{1}{2}$ inch.
Length	" " "	.	.	$\frac{3}{4}$ inch.

PHILADELPHIA, August, 1873.

ART. IV.—*On the Difficulties attending the Diagnosis of Aneurism, being a Contribution to Surgical Diagnosis and to Medical Jurisprudence.*

By STEPHEN SMITH, M.D., Surgeon to Bellevue Hospital, New York.

In a former number of this Journal (April, 1873) the difficulties of diagnosis of aneurism from abscess were considered and illustrated with cases. The present article is a continuation of the same general subject.

I. ANEURISM AND NON-MALIGNANT TUMOURS.—In its progressive changes an aneurism may assume all the apparent conditions of the different forms of tumour. It may be very soft and fluctuating, and be mistaken for a cyst, even when pulsation and a bruit are present; or a cyst lying over an artery may fluctuate, pulsate, and have a bruit, and be diagnosed

an aneurism and treated accordingly. Again, an aneurism may become firm and resemble a fibrous tumour, or it may have points of fluctuation like a fibro-cystic growth. The liability in diagnosis to error under these various circumstances and conditions is very great, as the records of surgery prove. The course which the surgeon should take in such cases is very important, and his position is often embarrassing. In the midst of doubt and danger he is liable to act imprudently, perhaps rashly, and the mistakes which he makes may be of the most serious nature. Under these circumstances he cannot do better than to follow the advice of one of the most eminent surgeons of the past. Boyer says:—

“In many cases it is impossible to pronounce in a positive manner, if a tumour placed over a large artery be an aneurism, or a tumour of another nature. In this doubtful case we ought to conduct ourselves as if the tumour were really an aneurism. In conforming to this rule it will no doubt happen that sometimes we shall not touch tumours the opening of which is proper and safe. But the inconveniences that may result from this, are not comparable with the danger to which the patient would be exposed by opening an aneurism instead of a tumour of another nature.”

1. *Aneurism mistaken for Cystic Tumour.*—If an aneurism should have very thin walls, and should not have the ordinary signs, as pulsation, bruit, expansion, it would almost inevitably be mistaken for a cystic tumour. Nor could the error be corrected except by puncture. Such cases must necessarily be extremely rare, for it is the unconsolidated aneurism which gives pulsation as its constant and most reliable symptom. But experience proves that an aneurism with thin walls may exist without pulsation, and so closely resemble an encysted tumour as to lead to an operation for its extirpation. Though the following case was “rare and remarkable,” still it deserves insertion, if for no other purpose than to demonstrate the fact that all symptoms are liable to deceive the surgeon in the diagnosis of aneurism. It was reported in the *Am. Journ. Med. Sci.* (vol. iv. p. 237, May, 1829).

A boy received a blow on the left temple; a tumour was developed which was supposed to be encysted, and extirpation was attempted. The excision was immediately followed by profuse hemorrhage, which was arrested by compression; the patient had convulsions, which soon terminated in death. The extirpated tumour was an aneurismal sac communicating with the middle meningeal artery, by an opening situated between the squamous border of the temporal and the corresponding portion of the parietal bone. The middle meningeal artery was of the size of a finger fifteen lines lower than the opening. A depression in the brain under the aneurismal dilatation contained one and a half ounces of bright blood.

2. *Cystic Tumour mistaken for Aneurism.*—If a cystic tumour should happen to be placed over an artery, it may with nicest accuracy respond to most of the tests of an aneurism. It may pulsate freely, and if it partially envelops the artery, the pulsation may be expansive. It may have a bruit sufficiently well marked to be deceptive, and it may to a certain extent recede, but not collapse when pulsation is arrested. In cases of this kind a correct diagnosis seems to be impossible without a resort to punc-

ture. And if it were a sanguineous cyst, even this test might fail to make the diagnosis positive.

Prof. Syme (*Edin. Monthly Journ.*) reported the following instructive case of this kind in which all the difficulties of diagnosis are graphically set forth :—

“A young man had a swelling in his neck, seated on the right side, occupying the upper triangular space, of an oval form, quite circumscribed, and obviously consisted of a bag containing fluid; there was distinct pulsation characteristic of aneurism; patient stated that the swelling commenced nine months ago, and had progressively enlarged without any apparent cause; when he worked hard or walked fast, it increased in size and beat strongly; varied the process of examination by placing him in different positions—by trying the effects of pressure on the artery and the tumour—and by listening to the sounds of the tumour. There was no distinct aneurismal ‘bruit,’ but a very strong, loud pulsation, that implied the action of the heart upon an extensive surface. After much reflection advised an operation; tied the carotid below the crossing of the omohyoideus; tumour immediately diminished in bulk, which was remarked even by the patient; went on well for five days, when hemorrhage took place from the wound, recurring from time to time, and finally proving fatal. On inspection a tumour was found extending from the ear to the extremity of the omohyoideus, and completely occupying the upper triangle of the neck. At the lower part it seemed to terminate in the sheath of the vessels, which looked like a prolongation of it downwards, but was found to be merely enveloped by the bag, which was dissected out from the coats of the vessels to which it had intimately adhered. The cyst was found to contain a fluid like thin gruel, and it possessed a tough consistence. At the posterior part, viewed internally, it displayed a sacculated or honey-comb-looking structure.”

It is noticeable that in this case all the symptoms of aneurism were present except a bruit. The absence of this symptom was in reality the most important fact elicited by the examination, for cystic tumours overlying arteries are not in general sufficiently compressible to so interrupt the flow of blood in the artery as to give a distinct, or in any sense a characteristic bruit. The “strong loud pulsation that implied the action of the heart upon an extensive surface,” is precisely the auscultatory sign of a cystic tumour lying in immediate contact with the artery. Mr. Syme, on the contrary, was influenced more by the expansive pulsation of the tumour, a symptom which is in general so characteristic of aneurism. The following explanatory remarks are of interest, as they prove the doubt and uncertainty which the most eminent surgeons experience in the diagnosis of aneurism :—

“I have had extensive opportunities of observing tumours of an aneurismal kind, and it was impossible for me to bestow more care in any instance than in the case just related. But the character which I have hitherto regarded as the most certain indication of aneurism may be presented by a peculiar state of things of an entirely different kind. I allude to the general expansive pulsation, especially when felt in a lateral direction. This was most distinctly recognized not only by myself but by several gentlemen well practised in the diagnosis of aneurisms, who agreed with me in the belief that an aneurism existed. Having come to this conclusion, and being requested by the patient to do what seemed proper, I had no course but to tie the artery. The low situation to which the ligature was restricted, the consequent proximity of the innominate, and the intimate adhesion of parts, no doubt led to the hemorrhage.”

A case not unlike the preceding was recently treated in Bellevue Hospital. The tumour was situated in the inferior and external triangle of the neck, had distinct pulsation, but no well-defined aneurismal bruit; the diffused impulse was noticed. A consultation of surgeons decided in favour of aneurism, and the operation of ligature of the subclavian was advised. A ligature was accordingly placed around the artery, but before it was tied the cystic nature of the tumour was discovered by puncture.

Breschet (GUTHRIE, *Inj. and Dis. of Art.*) reported a case of what was regarded as an encysted tumour, which communicated with the aorta.

The subject was a child, æt. 10 years, who had several abscesses form after scarlet fever. A tumour formed on the anterior superior part of the thorax, extending to the left side of the neck. A student of medicine, believing this tumour to be an abscess, punctured it, when a jet of blood was thrown out, and it continued to flow until the tumour was emptied. A stimulating injection was used and compression resorted to by compress and bandage. On the next day the tumour refilled and pulsated; on the second day she died. On examination the sac was found to consist of two parts, one external and the other internal, the communication being through a carious hole in the bone; the internal cavity communicated by a very small opening with the interior of the aorta on its anterior face, and near the carcinomata.

The existence of an encysted tumour in this case was very doubtful; it is much more probable that there was suppuration, and that the aorta was opened by the process of ulceration consequent upon pressure.

3. *Fibro-Cystic Tumour mistaken for Aneurism.*—A tumour of a solid character, but interspersed with cysts, as in the fibro-cystic variety, may be so related to an artery, as to give the most positive evidence of being an aneurism. In these cases expansive pulsation may be present, and also an imperfect aneurismal thrill. Such tumours, in contact with an artery, resemble in many important particulars the cystic variety. They admit often of marked expansion, and being more directly compressible upon the artery, they give a more definite bruit. The following case (*Lond. Med. Times*) shows how difficult the problem of diagnosis may be to solve with the data given.

A soldier was admitted to the hospital with a swelling in the left ham as large as a goose's egg, partly compact, partly fluctuating, and distinctly pulsating on moderate pressure; came on suddenly, three weeks previously, while walking; diagnosis aneurism; compression was tried, and afterwards the femoral artery was tied. The tumour, however, continued to grow, and the patient finally died of pulmonary trouble. On examination the tumour was found to be fifteen inches long, and twenty-four in circumference, pear-shaped, lobed, and firmly adhering to the periosteum of the tibia and femur. On the surface were five sacculi containing five or six ounces of sero-sanguinolent fluid, and apparently formed by the separation of the two layers, of which a tough fibrous membrane enveloping the whole tumour was composed. The tumour itself consisted in part of a dry fibrous reticulated tissue divided by partitions of loose tissue into lobes, and separated into two chief portions by a plate of bone; and in part of a softer substance, easily broken, rose-coloured, interspersed with fibrous tissue, and containing many cells filled with serous fluid. The femur and tibia were healthy. The artery ran over the tumour, and between two of the sacs of fluid on its surface, and through these its pulsations had been so communicated as to give the sensation of the whole tumour pulsating.

It does not appear in this case that auscultation was resorted to ; but there can be no doubt that a bruit might have been well marked. The proper test of such a tumour, as in the cystic variety, would be cautious exploration. In no other way could its nature have been satisfactorily determined. And yet it must be noticed that even a puncture might have misled the surgeon, for in the middle portion, where doubtless pulsation was most distinct, the exploring needle might have penetrated the artery, and possibly have obtained a jet of blood, which would have confirmed the diagnosis of aneurism. The exploration, to be of value in this instance, must be in the lateral parts of the tumour. And this rule in regard to the selection of the point of exploration of all tumours suspected to be aneurismal is important, as we thereby avoid the artery.

4. *Vascular Tumour mistaken for Aneurism.*—Vascular tumours, especially the arterial variety, often simulate aneurisms very accurately. They may pulsate expansively and have a bruit which though not characteristic of the aneurismal thrill, is yet liable to be mistaken for that of aneurism ; they cease to pulsate when firm pressure is made on the proximal portion of the artery, partially collapse, and again refill when the pressure is removed ; they cannot be raised from the artery any more than an aneurism ; if punctured, they give issue to arterial blood. Though an erectile tumour is generally more flat and less circumscribed than an aneurismal tumour, yet this is not always the case. The following case, reported by Dr. Kerr (*Ed. Med. and Surg. Journ.*, vol. 61), is in point:—

Mrs. F., 67 years of age, had on the right side of her neck a large circumscribed tumour, pulsating strongly, and extending from the angle of the jaw to the sternum and clavicle. At the lower part of the swelling mortification had made considerable progress, and arterial blood oozed occasionally from the sloughing portion. The sloughing process had penetrated nearly an inch in depth, and this circumstance, together with the firmness of the tumour, led to the opinion that it contained a large quantity of coagula. The tumour had very much the appearance of an aortic aneurism, which it was supposed to be, a careful examination not being made for fear of a fatal hemorrhage taking place. Under treatment the bleeding ceased ; the dead parts separated, and the sore nearly cicatrized ; tumour temporarily diminished in size. The danger of immediate hemorrhage being past, a careful examination was made. The trunk of the carotid was traced around the outer and posterior part of the tumour, being greatly displaced by it. Pressure on the artery below its bifurcation arrested the pulsation in the tumour. The swelling had begun twenty years previous, when it appeared about the size of a pea, near the angle of the jaw after a severe fit of coughing, remaining stationary for about ten years, when it began to increase, in consequence of the patient having made such exertions as were calculated to excite the action of the vascular system, until it finally reached its present magnitude. All these facts, together with the characteristics of the tumour, left little doubt of the case being one of aneurism of the carotid commencing at the usual place or at the origin of one of the branches, this being the opinion entertained by all those who saw the case. The *bruit de soufflet* was distinctly perceived with the stethoscope, and the thrilling sensation so characteristic of aneurism was strong on the cardiac side. The swelling again began to increase, giving rise to distress from pressure on adjoining parts, and the common carotid was ligated, the wound cicatrizing rapidly ; tumour diminished greatly in size, and the pulsation entirely disappeared. Nine months after the operation the patient died of pneumonia, and on

examination it was discovered that the artery was perfectly sound. The tumour seemed to be made up of cellular tissue and vessels loaded with blood, a large branch of the carotid leading into it and from which it seemed to derive its whole supply.

5. *Aneurism mistaken for Solid Tumour.*—An aneurism may become so far consolidated as to lose its characteristic features. This may occur while the tumour is small, or after it has attained to a considerable size. Pulsation may continue, but it has very nearly the character of the pulsation of a tumour situated upon an artery. The early history of the tumour is of great importance, and, if accurately given, may guide the surgeon to a correct conclusion. If, however, the early history is obscure, or unreliable, and the surgeon is compelled to rely upon his examination of the tumour itself, the diagnosis is often involved in great doubt and uncertainty.

In the following case reported by Mr. Lawrence, pulsation was not present, nor did the patient recollect that it was ever noticeable. Auscultation was not practised, and if it had been there is much doubt as to the existence of a characteristic bruit. (*Med. Chir. Trans.*, vol. 8.)

A middle-aged man was received into Saint Bartholomew's Hospital, with a large tumour filling up the whole ham, and extending on both sides of the femur towards the front of the limb. It had begun behind; had existed for five months; had grown latterly with great rapidity, and manifestly increased during a few days; had a firm fleshy feel, being a little softer at one of its anterior protuberances than in other parts; caused great pain, though it was not tender on being handled; had caused considerable œdema of the leg and foot, and had rendered the limb completely useless. The surgeons of the hospital in consultation regarded it as a large and rapidly increasing fleshy tumour, and decided that amputation of the limb was the only remedy that could be proposed. This was performed high up, having first plunged an abscess lancet into the softest part of the tumour to the whole depth of the blade, without giving issue to any fluid.

The examination of the amputated limb discovered that this tumour was a popliteal aneurism, containing an immense mass of firm bloody coagulum; not of that light-brown laminated kind, which lines old aneurismal sacs, nor of the loose and soft texture that belongs to recently clotted blood. Hence, although the sac had been freely penetrated by the abscess lancet, no part of its contents escaped.

6. *Fibrous Tumour mistaken for Aneurism.*—A fibrous tumour forming over an artery may receive pulsation and have a bruit, but neither are characteristic of well-developed aneurism. But a consolidated aneurism will sometimes give very nearly the symptoms of a solid tumour, and cannot very easily be distinguished from it. The history is then the most important feature of the case, and if that is unreliable the diagnosis must be involved in great doubt. If a fibrous tumour is small it may be raised from the artery, and thus its nature may be determined, but if larger, this test is of no value. The following case presents many of the more important features of a doubtful case. (*Lond. Lancet*, Jan. 4, 1873.)

A woman, æt. 64, accustomed to carry a heavy basket which constantly bruised the thighs, seven months since noticed a swelling size of hen's egg on inner side of left thigh; it grew slowly for four months, and then rapidly; now

extends from junction of lower and middle third of thigh to within two inches of Poupart's ligament; is ovoid in shape, smooth, and elastic, and has throughout a faint pulsation; femoral artery is felt along outside of the tumour pulsating distinctly; no change in pulsation in ham and at the ankle; pressure upon the femoral at the groin stopped all pulsation, but did not diminish the size of the tumour; the sphygmograph placed upon any part of the tumour gave marked evidence of pulsation by the free movement of its pointer; on exploration blood flowed; tumour varied in size and distinctness of pulsation from day to day; diagnosis uncertain and femoral artery was ligated as the most rational procedure in the event of the tumour being an aneurism of the profunda or a solid tumour. Pulsation was arrested, and tumour diminished slightly in size; subsequently it enlarged somewhat. Gangrene of the limb occurred subsequently, and proved fatal. The tumour was fibrous and attached to the linea aspera; the femoral artery ran over its surface.

The sphygmograph was used in this case to test pulsation, and it proved that there was pulsation in all parts of the tumour. And yet it is to be noticed that the femoral artery ran along the outside of the tumour. This instrument would seem to have misled rather than aided the surgeon, as it indicated pulsation throughout the tumour, when that pulsation was only an impulse feebly communicated to the mass from an artery lying quite external. Little or no importance seems to have been attached to the fact that the pulsation in the ham and at the ankle was unchanged.

7. *Neuroma mistaken for Aneurism*.—Closely allied to the fibrous tumour is neuroma, which may be so situated as to receive the impulse of an artery and be mistaken for an aneurism. In the case reported by Mr. Earle (*Lond. Med. Gaz.*, vol. 16) the most careful examinations were made, and that, too, repeatedly by surgeons of St. Bartholomew's Hospital in consultation, and yet the mistake was made of ligating the subclavian artery for a neuroma of an axillary nerve. The error was not discovered until the patient's death from another disease five years after the operation, and when he was supposed to have recovered from the aneurism. The case has many points of interest worthy of special notice.

"T. B., æt. 54, iron-plate worker, had a pulsating tumour situated immediately below the left clavicle; had been gradually increasing ten months; size of half an orange; lower part hard and without pulsation; upper part softer and pulsation distinct; no additional evidence afforded by the stethoscope; supposed to be aneurism of the subclavian artery where it passes the clavicle; pulsation in the humeral and radial arteries as strong as on the healthy side; this circumstance and the firmness of the greater part of the tumour led to the hope that a spontaneous cure by obliteration of the aneurismal pouch might be effected without arresting the current in the direct course of the artery; treatment consisted in low diet, saline medicines, moderate and repeated bleedings, and applications of pounded ice; tumour remained stationary as to size, and its pulsation diminished; pulsation of the artery beyond the tumour remained free and undiminished; at a consultation all the circumstances were discussed, particularly the undiminished strength of the pulsation of the artery beyond the tumour; the prevailing opinion was that the force of the circulation below was a proof of the free ingress of blood into the pouch, which of course made the probability of a spontaneous cure very slight; the patient was now in better condition for the operation, and delay might possibly cause the tumour to increase, raising more the clavicle, and thus rendering the operation more difficult; it was decided to operate. On the third day following, the tumour seemed to be increasing in a direction beneath the clavicle, and on the next day the operation was performed. On introducing the

finger into the wound, the aneurismal tumour was felt pulsating, and the clavicle was considerably raised from the first rib. The bulk of the tumour was very slightly diminished after the operation, and the contents of the sac felt very firm. The patient's health continued very precarious for some time, but after his removal from the hospital it improved and his wound gradually closed; but he continued to have pain in the tumour, inflammation around it took place and finally suppuration, he returning to the hospital after a few weeks' absence to have the abscess opened. A large quantity of unhealthy pus was evacuated; after some time the opening was enlarged, and a quantity of thick matter, supposed to be laminated coagula, came away, after which the abscess healed, leaving hardly a perceptible swelling beneath the clavicle; the tumour also subsided. He returned to work, the pulsation at both wrists being almost equal in strength; complained of a sense of coldness and numbness down the left arm. From 1830 to 1835 he was under my occasional observation, and finally he was re-admitted with general dropsy and great exhaustion, under which he died on the second of July of the latter year. At the autopsy a tumour was found an inch below the clavicle, oblong in shape, two inches in length by one and a half in width, lying upon and in the direction of the axillary plexus of nerves. The axillary artery was firmly united to one side by dense cellular tissue, the other side being intimately connected with the axillary nerves. The tumour consisted of grayish dense substance divided by white lines extending through it in various directions. A large nerve of the axillary plexus was attached to the upper, and another similar nerve to the lower end of the tumour, both being split into filaments at either end, which extended into the interior and on the surface of the tumour. The subclavian artery had been ligated upon the first rib."

In reviewing this case Mr. Earle remarks that it "furnishes powerful negative evidence in favour of auscultation, as certainly the usual sound of aneurism was absent." It is true that the absence of auscultatory signs was in itself evidence of the non-existence of aneurism, but by no means conclusive. As has been seen in many other cases, auscultation yields very equivocal evidence of the existence of aneurism. There may be no bruit whatever detectable when aneurism is present,¹ and there may be a well-defined bruit closely approximating the aneurismal without the presence of aneurism, or finally, there may be every shade of bruit with or without aneurism, except perhaps the so-called aneurismal thrill when acutely marked in aneurism.

Another symptom in this case which received the attention of the consultation was the undiminished pulsation of the arteries beyond the tumour. Ordinarily this would be regarded as one of the more important signs of the non-aneurismal character of the tumour. In this case, however, it was construed as evidence of the free entrance of blood into the cavity of the aneurism, and unfavourably to a spontaneous cure. This opinion was evidently erroneous, for the volume of pulsation of the arteries beyond

¹ "Such was the case in a woman under Mr. Vincent's care at St. Bartholomew's Hospital, in whom an aneurism followed the occurrence of a longitudinal rent in the posterior tibial artery, on its anterior face. The sac being formed at the posterior part of the artery, the stream of blood seemed to enter it indirectly. Hence probably the absence of pulsation. Nor was there any bruit. The diagnosis was only made after a long course of treatment, by an exploratory incision, when amputation became immediately necessary."—*Holmes' System of Surgery*, vol. iii.

the tumour diminishes in proportion to the freedom with which the current of blood enters the aneurism. No variation in the pulse of the affected limb would indicate that the current was uninterrupted, and would lead to the conclusion either that no aneurism existed, or if it existed that the cavity was closed. And yet, as will appear in the course of this paper, aneurisms may exist, and the distal arteries pulsate with undiminished force.

We shall in a future paper consider the diagnosis of aneurisms from malignant growths, from pulsating tumours of bone, from enlarged thyroid, etc. etc.

ART. V.—*A Contribution to the Anatomy of the Jugular Foramen.*

By THOMAS DWIGHT, JR., M.D., of Boston, Professor of Anatomy at the Medical School of Maine. (With three wood-cuts.)

THE objects of this paper are: 1st, to call attention to the great and, as far as the writer knows, undescribed variations of the jugular fossa, that part of the temporal bone which, together with the occipital, forms the *foramen lacerum posterius*; 2d, to consider the differences which the fossa, the foramen, and the neighbouring foramina present on the two sides of the same skull; and, 3d, the effect of these differences on the cranial circulation.

A. The size and shape of the jugular foramen depend to a certain extent on the formation of the jugular eminence and notch of the occipital bone, but far more on that of the notch of the temporal bone, while the lower aspect of the opening, and the jugular fossa for the enlargement of the internal jugular vein, depend almost entirely on the latter. The fossa is liable to great variations, and presents all the appearances intermediate between two extreme types, one of which is very common, and is the form usually described in text-books, while the other, though far rarer, is not rare enough to be called abnormal. It is astonishing that no mention of this latter form should be found in any of the modern systematic treatises on anatomy. In the seventh edition of Quain, we are told that "a smooth, rounded, and deep depression, the *jugular fossa*, lies internal to the styloid process, it is close to the posterior margin of the bone, and completes, with the jugular notch of the occipital bone, the *foramen lacerum posterius*." In many cases it is neither smooth, rounded, nor deep. There is no satisfactory description of it in Sappey, Cruveilhier, nor Luschka, nor, what is more surprising, in the admirable description of the bone in Henle's *Knochenlehre*.

The jugular fossa is situated on the inferior surface of the petrous portion, or, more correctly according to Henle, on the posterior external

surface.¹ The most frequent form consists of a thimble-shaped depression pointing upward, outward, and a little backward. (Fig. 1, *a*.) The rim of the thimble is usually well-defined, except behind, where it is lost in the border of a rough surface (*b*) which joins the end of the jugular eminence of the occiput; but sometimes the rim is wanting on the outer side so that the lower part of the wall of the fossa is formed on that side by the tympanic plate. A blunt crest (*c*)² separates the fossa from the *aqueductus cochleæ* and runs into the *processus infrajugularis* (*d*), a prominence on the posterior border of the petrous portion which assists to divide the foramen into an anterior and a posterior portion for the passage of the nerves and veins respectively.

Fig. 1.

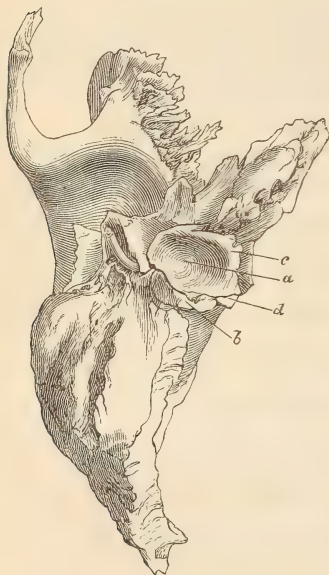


Fig. 2.



From this slightly amplified description of the most common form we pass to that of the least frequent, which is extremely puzzling to the student if he follows, as he should, the book on the bone. There is no thimble-shaped depression whatever, but merely an entering angle formed by two rough surfaces which meet in a groove running forward and outward. The posterior of these surfaces (Fig. 2, *b*) is for the junction with the jugular eminence, and is much larger than in the other type. The anterior one (*a*), nearly vertical, and slightly and irregularly concave,

¹ When the bone is *in situ* the highest part of the petrous portion is the ridge separating the surfaces commonly called superior and internal, excepting the point where the former surface is forced up by the superior semicircular canal.

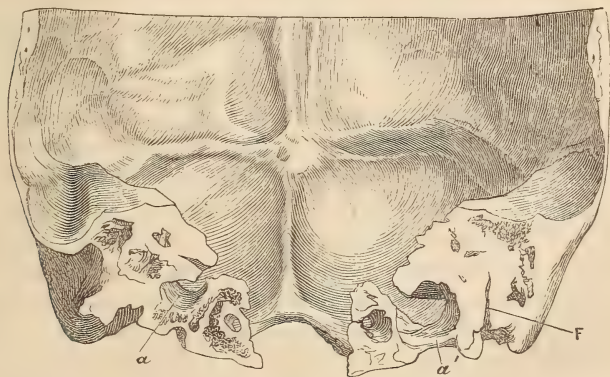
² Henle, *Knochenlehre*, s. 158.

represents the diminutive fossa. The inner and lower angle of the surface is prolonged into the infrajugular process (*d*), and its anterior edge (*c*) is very thick, taking the place of the blunt crest behind the aqueduct. In this form, one might imagine that the occipital surface behind, and the crest in front, had become enlarged at the expense of the fossa, of which nothing but the anterior wall remains. When the bones are joined to the occipital the effect is very striking; the foramen is reduced to a narrow slit, partially divided into a larger anterior and a smaller posterior one, by the very prominent infrajugular process.

All other forms appear to be intermediate; we may consider them as successively greater deviations from the former type. In the first grades the inner edge of the thimble disappears; then it becomes more shallow, till finally it is a mere concavity sloping outward and forward. As the fossa grows less, the anterior and posterior walls thicken as just described. It is the posterior or venous part of the foramen which suffers, the anterior undergoes little change.

Apart from variations in form, the foramen and the fossa may vary greatly in size. The depth and diameter of the fossa are equally uncertain. It is not too much to say that in two skulls of equal size the fossæ of one may have four times the capacity of those of the other, though made on the same plan. The foramina may vary as much as the fossæ and independently of them, though, as a rule, the size of the one is in direct ratio to that of the other. Both foramina of a skull may be decidedly above or below the average, but, as the next part shows, one is usually larger than the other.

Fig. 3.



B. The difference between the foramina of the two sides does not result solely from the quasi-accidental asymmetry of corresponding parts, but, as a rule, from a peculiar arrangement of the venous channels. The difference of the relations is well shown by vertical sections. Fig. 3 represents such a section through the head of a young subject, in which

there is a striking disparity between the foramina. The cut is made rather obliquely; on the right it is $\frac{1}{16}$ th of an inch in front of the stylo-mastoid foramen, while on the left it strikes the posterior wall of the canal (*f*) leading to it, yet such is the asymmetry of the skull, that while on the left the jugular foramen (*a*) is fully opened, the section on the right is just behind its orifice, and shows the lateral sinus (*a'*) turning over the jugular eminence.

To ascertain whether there is any fixed relation between the size of the opening, the shape of the fossa, and the size of the anterior and posterior condyloid foramina, the writer has examined very carefully the skulls in the museum of the Boston Society of Natural History, and those in the private collection of his friend Dr. J. Collins Warren. After the rejection of some more or less mutilated specimens there remained 159 ancient and modern, representing races from nearly all quarters of the globe. The first step was to study the variations in size of the jugular foramina of the two sides of the same skull. (The posterior or venous portion is, as already intimated, the important part as influencing the size of the opening.) This foramen was larger on the right in 104 cases, on the left in 38, and those of the two sides were equal in 17. Of the 142 cases in which one foramen was larger than the other, the fossa was more capacious on the same side as the larger foramen in 93 cases, on the opposite side in 19, and those of the two sides were equal in 30. In the same 142 skulls the posterior condyloid foramen was larger on the same side as the larger jugular foramen in 53, on the other side in 37, and they were equal or absent in 52.¹ In the same series the anterior condyloid foramen was larger on the same side as the jugular in 16 skulls, on the other in 11, and the two were equal in 115. It should be mentioned that the differences between the anterior condyloids were, with one or two exceptions, extremely slight. There does not appear to be any definite relation between their size and that of the posterior condyloids. The above figures are obtained by adding together the results of the examination of the two main classes: those in which the jugular foramen was larger on the right and left respectively. In the 17 skulls in which they were even, the neighbouring parts, though not quite alike, presented nothing worthy of description. To sum up roughly, we may say that of 159 skulls about two-thirds had the jugular foramen larger on the right side, about one-fourth on the left, and about one-ninth had the two equal; further, that about two-thirds of those having the foramina unequal, had the larger fossa on the same side as the larger foramen, while less than one-seventh of them had it on the opposite side; and lastly, that the posterior (and in a less degree the anterior) condyloid foramen was much more frequently larger on the same side as the jugular foramen than on the other.

¹ When but one posterior condyloid was present it was held to be larger than its fellow.

C. The application of what precedes to the cranial circulation is very simple. It is clear that, as a rule, the greater part of the blood tends to seek an exit on one side. It has long been known that one jugular vein is commonly larger than the other, and it is shown that the jugular fossa of that side is generally shaped so as to lodge a larger dilatation.

Fig. 3 shows the correspondence in size of the lateral sinus, the foramen, and the fossa of the same side. It appears also that the condyloid foramina, both of which transmit veins, show no compensatory disposition, but on the contrary are usually larger on the same side as the larger jugular foramen.

ART. VI.—*Case of Painful Neuroma of the Skin.* By LOUIS A. DUHRING, M.D., Clinical Lecturer upon Diseases of the Skin in the University of Pennsylvania, and Physician to the Dispensary for Skin Diseases, Philadelphia. (With a wood-cut.)

UNDER the name of painful neuroma of the skin, I propose to describe the following case which has been under my observation for the past six years, and was kindly placed at my disposal by my friend Dr. F. F. Maury, in whose ward at the Philadelphia Hospital the man is at present.

David W., aged 70; Irish, boiler-maker, but of late his trouble has incapacitated him for any kind of labour. His previous health has been excellent and none of his family or relatives ever presented any disease similar to that from which he is suffering. About ten years ago he first noticed the presence of a few, small, round nodules, situated in the skin of the left shoulder, attended with decided itching, but without pain. These nodules soon multiplied and increased in size. For four years they continued to appear in numbers, and by the end of this time the arm and shoulder were well studded with them. For the past five years their increase in number has been slower, but new ones have continued to appear up to the present time. Some of the older nodules have grown somewhat in size during the past five years. He is quite positive that it was not until three years after the first elevations were noticed, that there was any pain in or about them. Such are the important points in connection with the early history of this case. Since I first saw the patient, six years ago, there has been but little change in the appearance of the growth, with the exception that new scattered tubercles have developed at various points.

The disease is now characterized by the presence of numerous small, rounded, hard nodules, occupying the left scapular region, shoulder, and outer surface of the arm, as far down as the elbow, as is seen in the accompanying illustration. They are incorporated with the skin and subcutaneous tissue; vary in size from that of a pin's head to that of a large pea, and at certain points are situated closely together. They are elevated from one to four or five lines above the level of the surrounding healthy skin, and present a marked tubercular, knotty appearance. They are

firmly seated in the skin, and are in no instance pedicellated. Over the shoulder and arm, at the insertion of the deltoid muscle, the tubercles are closely packed together, and the intervening skin, though not tuberculated, is involved with the same new growth. At this point it presents a solid mass of hard tubercular tissue. The surface is rough, and nodular; about the scapular region as well as further down the arm, the nodules are more scattered and isolated, the skin between them being perfectly normal. The tubercles are scattered in irregular form and without definite arrangement. They do not occupy any particular nerve tract. The affected side of the body, including the arm,



corresponds in size with the healthy side. The diseased skin varies in color according to locality. Where the affection is most marked, about the shoulder, the tubercles are of purplish pink color, with a somewhat mottled appearance. Where they are isolated, their color is pinkish and lighter in shade, being more of the hue of the normal skin. But the color of the whole surface is subject to great variations, according to the position of the limb, external applications of one kind or another, as cold or heat, and the subjective symptoms. The tubercles are here and there covered with fine yellowish-white laminated scales, consisting of imperfectly formed epidermis, which are firmly attached and cast themselves off only slowly. These scales give to some of the older tubercles a whitish, glistening appearance. There are no tubercles or signs of the growth on the under surface of the arm, from the axilla down to the elbow. The skin here is smooth and normal in every respect, and can be freely handled without producing any uneasiness or pain. The tubercular mass about the shoulder and arm is warmer to the touch than other portions of the arm. During a paroxysm the part is quite hot, and remains so for some time after the

pain has subsided. The nodules are all more or less painful when touched or pressed upon. There are no bloodvessels visible upon the surface of either the central mass or any of the distinct tubercles.

The original starting point of the affection appears to have been at or about the insertion of the deltoid muscle, for here the tissues are now thickest and the pain most severe. During a paroxysm of pain the tubercles and skin involved change color rapidly, passing through various shades until they become purplish and even livid at times. As the paroxysm is ushered in and while it is at its acme, the parts are seized with a quiver, which extends over the whole arm and is paroxysmal, occurring every few seconds during the height of the attack.

Intense pain, of a paroxysmal nature, constitutes the distressing feature of the disease. This was developed gradually, first showing itself about three years after the appearance of any external manifestation, and soon increased in severity, keeping pace with the development of the disease. For the last five or six years the pain and paroxysms have been about the same in degree and character. The pain during a paroxysm is excruciatingly severe, and from my repeated observations of these attacks, I doubt if any words can fully express the amount or character of the suffering the patient undergoes. As the pain comes on he endeavours to support the affected arm with the other hand, pressing it towards the body. But he dares scarcely touch it, for so sensitive is it now that even the breath blown upon the surface excites additional pain. At one time he endures the paroxysm in the standing position, or he seats himself upon a chair or the floor, and remains in a cramped condition, unmindful of all surroundings, until the extreme pain ceases. Frequently his sufferings are so severe that he is unable to contain himself, and he cries out so vehemently and piteously that he can be heard all over the building. Frequently I have seen him roll over the floor in agony, unable to control himself.

This very intense suffering remains at its height but for a short time, from ten minutes to a half hour, when signs of abatement are noticed, and in an hour or two the attack subsides. In attempting to describe the nature of the pain, beyond the fact that it is indescribably painful, we can learn but little concerning it. He has frequently, however, compared the sensation to a stream of ice-cold water running down the arm, together with the pain of burning and pricking.

The paroxysms vary in duration and in frequency of occurrence. They also vary in intensity, according to the immediate cause which has occasioned them. When slight an attack lasts perhaps ten minutes, or if severe an hour. If quiet and undisturbed, and with the part protected, there may be but one or two paroxysms in the course of the day, but if the patient becomes worried or excited from any cause, or if the arm be exposed to violence, the attacks are much more frequent and correspondingly violent. Exposure to cold invariably causes pain, while rough handling or pressure of any kind is inevitably followed by severe paroxysms. Any movement of the arm, as necessarily occurs when his garments are changed, always gives rise to an attack of more or less severity. The lightest draught of wind is all-sufficient to produce a paroxysm. The pain is influenced very much by the condition of the weather. Of this fact the patient assures me positively, and the statement is confirmed by the nurses and his fellow-patients who have him continually under observation. He is always much worse the day preceding a storm or a great change in the weather. He is always worse and suffers more during a rainy or snowy season. He is decidedly better in summer than winter.

The area of pain is much larger at the present time than it was a few years ago, but this is accounted for by the development of new tubercles in tissue previously healthy. The pain in a severe paroxysm shoots rapidly down the arm, even as far as the knuckles; it also spreads itself over the pectoral region, and up the side of the neck and head. The patient complains of a buzzing, singing sensation in the head, which he affirms is almost constant and of late has been increasing in intensity. A neuralgic pain is also present in the head at times, which is liable to exacerbations during a paroxysm. His general health and condition are remarkably good considering his sufferings. His appetite is not wanting, and when free from a paroxysm he is able to rest and sleep quite well. The paroxysms, however, frequently awake him out of a comfortable sleep.

Before entering the Philadelphia Hospital, with a view to obtain alleviation of pain, he submitted to having the arm and shoulder thoroughly blistered on several occasions, which proceeding, he thinks, gave him some relief for a period of six weeks. But his memory is rather vague concerning the past, and it is to be considered that this statement cannot be accepted without reserve. Since his admission to the hospital various means and remedies for his relief have been tried, but without the desired result. Hypodermic injections of morphia have frequently been administered during the paroxysms, with a view of checking their violence, but even with large doses the end has scarcely been attained. The relief afforded by this means is not material, and the after-effects upon his head are so unpleasant that he prefers to endure the pain. Steam baths to the part have also been employed, but with little relief. Direct dry heat undoubtedly affords more ease than any other application that has been made, and he is never so comfortable and free from pain as when sitting close to a hot stove or fire with the arm exposed to the heat. When a paroxysm comes on he at once seeks the fire and there remains until the pain has abated.

With the hope of ascertaining the nature of the disease, the man consented to the excision of several of the tubercles. Three were selected in different regions as being most characteristic of the affection. Two of these were situated in the central mass, about the shoulder, and the third was a well marked, comparatively recent, isolated tumor, seated in the skin of the back about one inch to the right of the spinal column. The patient was etherized, and the growth removed, care being taken to include a considerable portion of the subcutaneous tissue with the incision. Unusually severe pain, continuing for several days, followed the operation, due in a great measure to the state of excitability which the whole proceeding occasioned, excitement of mind being always followed by an aggravation of the sufferings. Very little hemorrhage occurred. The wounds were very slow to cicatrize. The nodules directly after removal were of the size of large peas, irregularly rounded and defined; firm and quite hard to the touch and of a dirty white color. Cutting one of them open, vertically, the internal surface presented a dull white color affording scarcely any blood or fluid upon pressure. The cut surface appeared homogeneous and solid throughout to the naked eye. The growths were not found to possess any filamentous attachments of any kind. The specimens were immediately placed in alcohol and a solution of bichromate of potassa preparatory to microscopical examination. After carefully imbedding small vertically cut pieces in wax, thin sections were made with a razor and examined with glycerin. Some of the specimens were stained with a chloride of gold solution

of one-half per cent. strength, while others were coloured with a carmine solution. Many sections were submitted to close examination, with the following result. The epidermis was irregular and uneven in structure, and here and there completely broken down. The rete was imperfectly developed in certain of the sections, at one point showing normal growth and arrangement, while in other specimens there appeared an abnormal distribution of the younger cells. A singular concentric formation of the cells of the rete was here and there noticed, resembling the globular arrangement of epithelioma, but this condition was not universal, occurring only in certain sections. The papillary layer was irregularly developed. The papillæ were here and there greatly hypertrophied. The corium was abnormally infiltrated with new connective tissue growth which was firm in structure. The tissues beneath and the mass of the specimen consisted of a solid, resistant looking connective tissue, irregularly developed and uneven in arrangement. The bulk of the tissue was old in appearance and well felted together, the new cell elements being entirely wanting. The connective tissue fibrils were closely packed in places forming wave-like bands. There were also numerous free fibrils of elastic tissue scattered here and there through the specimens, particularly in the deeper portions of the tubercle, where in places they formed a delicate network. Here and there filaments appeared isolated, resembling very much fine nerve fibres. But among the many sections examined with the utmost care, it was impossible to find either nerve trunks or branches.

This case, I venture to remark, is without a parallel in medical literature. After careful research I have been able to find only two cases which bear any likeness to it, and these, it will be observed, present symptoms quite different from those in our case.

In plate VII. of Dr. Smith's atlas of neuroma will be found the portrait of a man whose disease bears a striking resemblance to that under our care, but upon investigation it will be noticed that the affection differs in important particulars, and that, though at a glance it appears to be the same form of disease, it in reality is not.

The case is that of a farmer named Michael Lawlor, æt. 32, admitted to the Whitworth Hospital, under the care of Dr. Corrigan, with symptoms of gastro-enteritis. During the investigation of the case, the abdomen and body were found to be studded with numerous small tumours situated *beneath* the integument. Many of them were about the size of peas, movable, and of firm consistence. But some were larger, and one existed about the tuberosity of the ischium, which was the size of a swan's egg. It was slightly movable in the transverse direction and equally solid throughout. The integuments were healthy, and could be moved freely over the surface of the tumour, pressure upon which caused pain. The sensation was of numbness rather than of pain, the patient stating that the limb felt as if it were asleep. The large tumour was the first to which the notice of the patient had been attracted and was of the size of a gooseberry when first observed. Its appearance was preceded by a sensation in the part "like the trickling or dropping of cold water down the limb."

Another tumour, larger than that just described, of whose existence the patient was not aware, was found placed deep in the hypogastrium, and another, the size of a walnut, situated upon one of the branches of the right anterior crural nerve. These three tumors were painful when pressed upon, the others in great number over the body were the source of no uneasiness. They were all movable from side to side, were oval in form, and of solid consistence. The

patient became very much emaciated from the effects of the gastro-enteritis, and in this condition it was evident that the tumours were seated along the course of nerves. The patient died, and the autopsy revealed these tumours to be seated upon the nerves in great numbers. Indeed the examination disclosed the fact that all the nerves of the body were more or less affected with these neuromatous tumours, more than two thousand distinct growths having been discovered.

This is perhaps the most interesting example of general multiple neuroma upon record, but from a review of the prominent features it is manifest that the disease cannot be considered as identical with that of David W. The subjective symptoms here are altogether different, as well as the form of growth itself, which must be regarded as a typical instance of the ordinary multiple neuromatous tumour. The corium, so markedly affected in our case, is in no way involved, the tumours being situated deep beneath the skin.

The other case to which I have referred as being somewhat similar is reported by Vallender and quoted by Virchow. But the symptoms in this instance likewise are very different, a few of the larger tumours here being alone painful and these only upon pressure.

But although the case of David W. is unique as regards development, the general features are of such a character as to admit of no hesitation in deciding to which class of pathological formations it belongs. Without doubt to the neuromata, for here only will the affection find its position in pathology. Viewing the case on the other hand, from a clinical standpoint, with no other group of morbid growths is it possible to account for the violent symptoms accompanying the disease.

Reported examples of general multiple neuroma, where the tumours occur in numbers, are rare, Virchow estimating that probably not more than thirty cases are upon record. They are usually free from the pain which is so constant with the single neuroma, a fact very difficult to account for, but which is mentioned in connection with most of the reported cases, as for instance in the case of Michael Lawlor. We find the symptoms in our case, however, completely at variance with this usually accepted statement, pain not only being present, but also most violent neuralgic paroxysms, exactly like those described in connection with the painful subcutaneous tubercle. Were these symptoms alone considered, the case might well be grouped with this latter tumour, so minutely do they correspond. But there are important points of difference between our case and the painful tubercle. This little tumour, as described by Wood, Descot, Dupuytren, and Paget, is never a multiple growth, but a solitary tumour, rarely ever more than one existing upon the same patient. Moreover it is always spoken of as being situated *beneath* the subcutaneous tissue scarcely perceptible to the eye. It is also always found to be freely movable under the skin, and never in any way attached to it or involved with it. Additional points of difference there are which preclude the two forms of disease from being considered identical.

The writer is indebted to the following works which have been of invaluable assistance in the study of the case under consideration: Virchow, *Die Krankhaften Geschwulste*, Berlin, 1863; Descot, *Affections Locales des Nerfs*, Paris, 1825; W. Wood, *Edinburgh Med. and Surg. Journ.*, 1812; *Trans. of Med.-Chir. Soc. of Edinburgh*, 1829; R. W. Smith, *A Treatise on the Pathology, Diagnosis, and Treatment of Neuroma*, Dublin, 1849; Craigie, *Elements of General and Pathological Anatomy*, 1848; Miller, *Principles of Surgery*, 1844; Wedl, *Pathological Histology*, Syd. Soc. translation, London, 1855; Dupuytren, *Leçons Orales de Clinique Chirurgicale*, Paris, 1832; Paget, *Lectures on Surgical Pathology*, London, 1870.

ART. VII.—*Remarks on Interstitial or Syphilitic Keratitis, with Report of Cases.* By SAMUEL THEOBALD, M.D., Ophthalmic and Aural Surgeon of the Eye and Ear Dispensary, Baltimore.

THE correctness of the views first advanced by Mr. Jonathan Hutchinson, of London, as to the syphilitic nature of interstitial keratitis, is still questioned, and, in some quarters, even stoutly denied. If I could have entertained any such doubts, after eight months' constant attendance upon Mr. Hutchinson's clinic at Moorfields Ophthalmic Hospital, London, during which time I frequently saw him demonstrate the connection, which he has shown to exist, between this form of ophthalmia and inherited syphilis, my experience, since returning home, would certainly have dispelled them.

Mr. Hutchinson remarks that this disease, as well as the notched and pegged teeth that so often accompany it, and which he has also shown to be dependent upon congenital syphilis, is much more prevalent among the inhabitants of certain countries than of others, when the dissemination of syphilis is equally great. Among the English and Americans, and, as I have been informed by Snellen, among the Hollanders, the typical teeth, and interstitial form of keratitis, are of frequent occurrence, while in Germany and in Austria they are rarely seen. Thus, during six months spent in attendance upon the clinic of Arlt in Vienna, I saw but one case which at all resembled this disease, and in this, the characteristic teeth were not present. It was diagnosed as scrofulous corneitis, the previous history of the patient, a girl about fifteen years of age, not being especially inquired into.

It is on account of this peculiarity of distribution, no doubt, that many of the Continental, and especially the German ophthalmological authorities, who do not find the views of Mr. Hutchinson confirmed by their own experience, are somewhat sceptical about accepting them.

Before its syphilitic nature had been recognized this disease had attracted the attention of other English writers upon the affections of the eye, and under the name of "scrofulous corneitis," had been described by Mackenzie, as a disease "specifically different from every other form of ophthalmia."¹ The prominent characteristics of interstitial keratitis, as pointed out by Mr. Hutchinson, are, the *ground-glass* appearance which the cornea assumes from *interstitial deposit*; the absence of ulceration, and of any tendency to pustules; the comparatively small amount of sclerotic or conjunctival congestion; the chronic character which it exhibits; the almost invariable tendency to affect first one eye and then the other; the age of its subjects seldom under five, or over eighteen years; the fact of its usually affecting the elder children of the family; and, lastly, the ultimate result which, as regards vision, is very much better than could have been hoped for, judging from the opaque condition of the cornea in the early stages of the attack.²

Intense photophobia, as in true scrofulous or phlyctenular corneitis, is generally present during the height of the disease, and when the inflammatory symptoms are marked, the conjunctival and subconjunctival injection is pronounced; the vascular development often encroaches upon the cornea, imparting to it a salmon-coloured tinge, and at certain points upon its periphery, where the vessels are more closely crowded together, giving it a peculiar appearance, as though it had been painted, in a radiate direction, with browish-red paint. Under such circumstances, the surface of the cornea often becomes roughened and granular, and vision is reduced to mere quantitative perception of light. In the worst cases the iris may become involved, posterior synechia, and occlusion of the pupil, perhaps, resulting; or the inflammation may extend to the ciliary body and choroid, as evinced by the diminished tension of the globe, and the subsequent choroidal atrophy. When these complications occur the impairment of vision will, of course, be more lasting.

In this connection it may not be out of place to mention a fact which I have so often observed as to place it beyond the domain of accident, that in syphilitic inflammations of the uveal tract, as opposed to traumatic, sympathetic, and glaucomatous inflammations, in which the opposite condition exists, the intra-ocular tension is almost always diminished, and this is equally true whether the affection be due to acquired or inherited syphilis.

In several of the following cases, as will be seen, I was able, after the diagnosis had been made from the appearance of the eyes, to ascertain that the patients were subjects of inherited syphilis; and in all of the others there existed various circumstances which went to confirm the opinion of Mr. Hutchinson, as to the invariably syphilitic nature of this form of

¹ Syphilitic Disease of the Eye and Ear, Hutchinson, London, 1863, page 26.

² Ibid.

ophthalmia, and it is on this account, mainly, that they seem worthy of publication. The peculiar physiognomy, which is referred to in the following notes, and which Mr. Hutchinson has described as characteristic of inherited syphilis, consists, besides the notched and pegged teeth, of a broad and sunken bridge to the nose, a prominent and ill-shapen forehead, and a coarse and flabby skin, presenting, perhaps, scars and pits upon the face and forehead, and cicatrices of old sores at the angles of the mouth.

CASE 1. Double interstitial keratitis; characteristic teeth and physiognomy; history of infantile syphilis, and confirmation of its being inherited.—A boy, aged 8, the eldest of several children, the others healthy, came under my care about the 1st of January, 1872; both eyes had been affected for several months, and he had also been troubled for some time by slight pain and swelling in the ankle and wrist-joints. The prominent symptom, at this time, was extreme photophobia. Upon the supposition that the case was one of phlyctenular ophthalmia, I ordered a solution of atropiæ sulphas, gr. j to aq. dest. ʒj, to be dropped into the eyes every three hours; ung. belladon. to be rubbed on the forehead, and syr. ferri iodid. to be given internally.

In a few days the photophobia had so far disappeared, that I was able to examine the eyes, and learn the true nature of the disease. The infantile history being inquired into, it was ascertained that he had been delicate and puny for some time after birth, and had had sores about the anus, rash on the body, and snuffles. He had not yet cut his upper teeth, and his under teeth were not peculiar, but in other respects he presented the characteristic physiognomy, having a prominent forehead, sunken bridge to his nose, and several scars about the face and forehead.

Satisfied that the affection was due to inherited syphilis a mild specific treatment was at once commenced; minute doses of hydrarg. bichlorid. in connection with syr. sarsaparillæ being administered three times a day.

Jan. 10. Eyes wide open; photophobia entirely gone. Both corneæ present the "salmon-coloured tinge," and are completely opaque; so that it is impossible to discern the iris in either eye. The conjunctival and subconjunctival injection is very decided, especially in the left; and the surface of the cornea, in this eye, presents a roughened and granular appearance. He can see the direction of window, and, while looking towards it, can tell when a hand is passed before the eyes.

15th. General health, appetite, etc., reported to be much better; he has not complained of pain in joints for some days. Since last visit I have seen the family physician, and learned from him, that *he had treated the father, at intervals, for a long period for tertiary syphilis.* Ordered atropia to be instilled once a day only.

22d. Cornea of right eye a little clearer, and has lost the salmon-coloured tinge, which is, also, less marked in the left. As the photophobia has disappeared entirely, directed the ung. belladon. to be discontinued, and the atropia to be used every other day.

Feb. 8. Both corneæ clearer; iris visible in right eye, through any part of cornea, except just in its centre, and in left at one or two points. He is able to distinguish bright colours. Discontinued syr. ferri iodid.

March 7. Clearing of cornea has continued steadily; he is now able with the right eye to count fingers promptly, and with the left doubtfully.

April 2. Slight increase of subconjunctival injection in left. The ciliary

region is sensitive to the touch, and the intra-ocular tension reduced to — T 1. Increased the dose of hydrag. bichlorid. and syr. sarsaparillæ.

17th. Was able, by oblique illumination, the opacity having diminished, to examine the condition of the pupils and irides. Although the atropia (gr. j to $\bar{3}j$) has been used as directed, the right pupil is seen to be imperfectly and irregularly dilated, and the iris itself thickened and muddy. The left pupil is less dilated than the right, and the iris is in a like condition. Ciliary region of left eye no longer tender, and T very slightly below normal. Ordered sol. atropiæ gr. iv to $\bar{3}j$ to be dropped into eyes once a day, in order to dilate pupils.

24th. Right pupil well dilated; left very slightly so. He can count fingers promptly with left, and with right can distinguish one or two letters of Snellen's types, No. LXX, held close to the eyes.

It is unnecessary to follow out the details of this case further, as they present no points of special interest. Suffice it to say, that he is still under observation, and has continued, at intervals, to take the mercury and syr. sarsaparillæ in somewhat diminished doses, and has also taken some iodide of potassium. Under this treatment he has gained flesh, and his general health has improved. The pupils having both dilated well, and no synechiæ being present; the atropia was discontinued some time since. The corneæ have continued slowly to clear, and the eyes are now free from redness. His vision has so far improved, that he is able to run about and play with his companions on the streets, and can read Jaeger's types, No. 19, and Snellen's No. XX, with facility. There is still considerable diffuse cloudiness in both corneæ, which is, unfortunately, most dense in their centres. This is, however, gradually lessening, and the sight will, eventually, be much better than at present.

In September last, his left superior central incisor tooth slowly cut its way through the gum. It was not peg-shaped, but presented the typical notch. When last seen in February, of the present year, this tooth, though five months old, had obtained but half its proper length, and its fellow had not yet made its appearance.

CASE II. *Double interstitial keratitis in a mulatto girl; characteristic teeth; history of infantile symptoms, and of syphilis in patient's mother.*—A girl, age 13, tall and stout for her age, weighing over a hundred and fifty pounds, and looking to be, at least, 20 years old, was brought to my office, June 20th, 1872, by her father, a mulatto. The right eye had been affected for four months; the left had been slightly inflamed for a few days only. She had been under the care of an oculist, but the syphilitic nature of the affection had apparently been overlooked. The right eye presented, at this time, a very characteristic appearance; the cornea being diffusely hazy, its epithelium granular, and the subconjunctival congestion considerable. The appearance of the left eye was much less characteristic, there being slight peri-corneal redness, and photophobia, and a few punctate opacities on surface of cornea, but no interstitial haziness. The sight of left eye was but little impaired, but she was only able to count fingers with right. Upper central incisors were very wide apart, dwarfed, and notched, but not pegged. The other teeth were also typical, especially the canines. Satisfied of the nature of the affection, I asked the father if he had ever contracted syphilis. He denied having had it, but gave the following history, which was afterwards confirmed, in every particular, by his wife.

His wife, also a mulatto, had had several children after their marriage; they were all healthy at birth, but had died young from scarlet fever, etc. Another child was born, which was also quite healthy; but when a few months old, contracted a sore upon its mouth from a negro woman, who lived in the house at the time, and who had herself contracted syphilis, as was known, from her husband. The child in nursing, communicated the sore to the mother's nipple; and she, afterwards, had a slight rash on her body, but no other syphilitic symptoms. The child had a rash, from which it recovered; but died when three years old, of scarlet fever.

Some months after this, the mother had a miscarriage, the child being dead at birth, and covered with a rash. She afterwards had another child, which was born at full term, had a rash on its body, and died when quite young. After this the patient was born. She also had a rash when a baby, and soon after became afflicted with ozæna, which still persists.

A specific course of treatment similar to that adopted in Case I., was at once commenced, and a sol. of atropia (gr. j to $\frac{3}{4}$ j) was ordered to be dropped into the eyes three times a day. Under this treatment, they very soon began to improve, and the cornea of the right eye to clear.

Aug. 17. Subconjunctival injection much less in the right eye, and the cloudiness of the cornea greatly diminished; left eye no worse than when first seen, but is little changed, and still presents some superficial redness about the borders of cornea. Right has $V = \frac{20}{cc}$, and can read a few words

of Jaeger, No. 10. After this, her eyes being better, she became less concerned about them, and contrary to my instructions, she stopped taking the remedies soon after seeing me, and did not report again until Dec. 30th, when she came to say they had not been quite so well for a few days. There was still slight redness in right eye, and considerable haziness of cornea, although she was able with it to read Jaeger, No. 8, and with the help of a convex glass, + 10 (her accommodation being paralyzed by atropia), to read with some difficulty, Jaeger, No. 5. The left eye showed no signs of inflammation. I directed her to take $\frac{1}{48}$ gr. of hydrag. bichlorid. in solution, three times a day, and to use atropia occasionally. In spite of this treatment, however, the threatened relapse was not checked, but the eyes continued to grow worse, so that when next seen, Feb. 3, 1873, the left eye was slightly red again; the corneal opacity and subconjunctival injection in the right much greater than when last seen. Under these circumstances the combination of hydrag. bichlorid. and syr. sarsaparill., which had been administered, apparently with good effects, when she first came under my care, was again prescribed.

March 4. She was seen for the last time, and, although she admitted that she had not taken the medicine regularly, both eyes were decidedly better. She was directed to continue the same treatment and report in a few weeks, but has not been heard from since.

CASE III. *Double interstitial keratitis; suspicious history and teeth.*
—A boy, æt. 9, was brought to my office, Aug. 21st, 1872. He had been complaining of light hurting his eyes for a week or two, but they had been red and inflamed only four days; the right was first affected. Both corneæ presented the characteristic "ground-glass" look, and were surrounded by well-marked zones of conjunctival and sub-conjunctival congestion. The corneæ were not so opaque but that the pupils could be distinguished. The photophobia was excessive, so that vision was not tested. The pa-

tient's father, who had been a dissipated man, died from the effects of an injury. The mother was healthy; she had had three children; the patient was the youngest, and the only one living, the others died in infancy. She had never had any miscarriages; but was ill for a long time after the birth of her first child, which "pined and dwindled" till it died. It had no rash. The patient's physiognomy was not peculiar. His superior central incisor teeth, however, were wide apart, and unlike in shape; one of them being considerably broader at its lower extremity than it was nearer its base. The deciduous teeth were very carious, and much worn away. A minute quantity of bichloride of mercury in combination with syr. sarsaparillæ was ordered to be taken three times a day, and a sol. of atropia to be instilled into each eye night and morning.

Sept. 5. Photophobia so great I could not get a look at eyes. His mother says they seem better now, however, than they were a few days since. He has been so blind with them as to be unable to get about the house. Ordered ung. belladon. to be applied to forehead and brows; other remedies to be continued as before.

19th. Has been steadily improving since last visit. Photophobia less and sight better. The right eye nearly free from redness, and the corneal opacity much diminished. The opacity and redness are more decided in the left than in the right eye. Ordered to stop ung. belladon., and to continue other remedies. Has not reported since.

CASES IV. and V. *Interstitial corneal opacities in two sisters; the results of keratitis in childhood.*—Besides the diffuse haziness of both corneæ in the elder sister, the atrophied condition of the irides showed that they also had been diseased. Her vision being tested, it was found that with the right she could only count fingers, with the left $V = \frac{10}{cc}$.

The corneal opacities were not sufficient to account for this defect of sight, but the ophthalmoscope revealed in both eyes extensive choroidal atrophy, with large, irregular-shaped pigment deposits scattered about the fundi; and secondary atrophy of the retinae and optic nerves, most marked in the right, evidently the result of former choroido-retinitis. She presented the characteristic physiognomy in a striking degree, having a prominent forehead, broad and sunken bridge to nose, and ill-shapen and defective, though not typically formed, teeth. The eyes were first affected when she was a child, and the history of the disease, so far as it could be obtained, confirmed the conclusion to which their present appearance had led me.

The second sister was seen subsequently, and here, according to the usual rule, the condition of the eyes indicated that the disease had been much less severe, and that the deeper structures had not been involved, as in the elder sister's case. The only evidences which remained of the keratitis, with which she had suffered in childhood, were slight, but very characteristic, nebulous opacities in both corneæ. There was nothing peculiar about the physiognomy or teeth. She remembered that, when quite a young girl, she had been confined to the house for months on account of her eyes; that they were extremely sensitive to light, and that for a time, she had been almost entirely blind. She is now able to read ordinary newspaper print, by a good light. The younger children of the family were healthy and had never suffered with their eyes.

CASE VI. *Double interstitial keratitis; characteristic physiognomy and teeth; history confirmatory.*—A girl, aged 16, was brought to me

Dec. 30, 1872. Her right eye was free from disease. The left had been inflamed about two weeks, and the ground-glass appearance of the cornea was well marked. The opacity was not sufficiently dense to prevent the iris and pupil being seen. There was but little photophobia or redness, and no sensitiveness of the globe to the touch, but the tension was reduced to — T 1, and she complained of pain at times over the eye. She was able, with this eye, to read Snellen's types, LXX, at the distance of a few inches. She had a prominent ill-shapen forehead, and having lost the bones of her nose from ulceration in infancy, the soft parts, from want of support, had fallen in, and her face presented the unsightly appearance which characterizes this deformity. She is said to have had no rash or other symptom of syphilis in infancy, except the disease of her nose. The teeth were typical. The lower incisors were small, worn away at their edges, and somewhat peg-shaped. The superior incisors, of which there were only three, the right lateral incisor appearing never to have been developed, were notched and pegged to a striking degree.

Her father and mother were both alive, and were said to be healthy, except that the mother suffers with rheumatism. The father was reported to be a "good-for-nothing, worthless fellow." The mother had lost two sons and three daughters, older than the patient. They all died in infancy, except one daughter, who, when 13 years old, was taken with a severe headache in the morning and died before night. There were two sons older, and one daughter younger, still living. One of the sons had had disease of his eyes, and had lost the sight of one of them. Satisfied of the syphilitic nature of the affection, I ordered $\frac{1}{4}$ gr. hydrarg. bichlorid., to be taken three times a day, and atropia to be applied to the left eye.

1873, Jan. 30. Has been taking the medicine, and using the drops regularly. The inflammation and opacity in the left eye have, notwithstanding, increased; and the right eye presents signs of commencing keratitis, the cornea being slightly hazy, and surrounded by a zone of subconjunctival injection.

As she did not report again after this date, the further progress of the case is not known.

CASE VII. Double interstitial keratitis; characteristic teeth and physiognomy; history of infantile syphilis in patient, and in her elder brother.—A girl, aged 9, was brought to Eye and Ear Dispensary, Dec. 31, 1872. The left eye had been inflamed about three weeks, and the cornea presented the usual interstitial haziness and salmon-coloured tinge, from the development of bloodvessels in its structure. Its surface was lustreless and granular; and the conjunctival and subconjunctival congestion was very pronounced. Photophobia slight, T n. Pupil and iris visible; was able with this eye to count fingers, and recognize several letters of Jaeger No. 24. The right eye presented no signs of keratitis; but the ophthalmoscope revealed in it a very extensive posterior staphyloma, and a correspondingly high degree of myopia.

The patient's mother, who came with her, was healthy. She had never had any miscarriages. The father died, several years ago, of "consumption." There had been but two children born, the patient, and a boy, older. The latter had, soon after birth, "sore eyes," rash and sores upon his head and body, and about the anus, which were attributed to scrofula. The patient was similarly affected except the eyes, and had had, moreover, a bad sore mouth, and a nasal catarrh, from which she was still suffering.

She did not walk or talk until she was nearly four years old; but is not now deficient in intellect. She had nodes upon her tibiae, and was subject to rheumatism. Deciduous teeth decayed early and extensively; lower permanent teeth small, but well formed; upper ones had all obtained their full growth, except the right central incisor, which was just through the gum, although its fellow had long since preceded it. It was somewhat narrowed below, and decidedly notched. Other superior incisors, though unsymmetrical, dwarfed, and somewhat peg-shaped, presented no notches. The treatment was that adopted in most of the foregoing cases. A combination of hydrarg. bichlorid. and syr. sarsaparil. was ordered to be taken three times a day, and atropia to be dropped into the affected eye.

Jan. 31. Left eye decidedly better; redness and photophobia less, cornea much clearer. She can read with it Jaeger No. 15. The right eye began to grow weak six days since, and now presents some conjunctival redness, with slight photophobia, and interstitial cloudiness of cornea. Can only read Jaeger No. 12 with this eye. To continue internal remedies and apply atropia to both eyes.

Feb. 15. Left eye almost free from redness, cornea clearing. Inflammation in right eye increased; cornea presents a reddish tinge, is completely opaque, and has lost its brilliancy, the epithelium being rough and granular. Pupil and iris invisible, and has only perception of light. Dropped 4 gr. sol. of atropia into right eye.

March 8. Left eye improving. Right no better, cornea quite red from the development of new vessels, and at one or two points upon its periphery, where these are most numerous, it has this appearance, as though the edge of the cornea had been painted with brownish-red paint, etc. Ordered four powders, containing each—hydrarg. chlorid. mit. gr. j; pulv. scammonii gr. ij, pulv. rad. rhei gr. iv. To take one, at bedtime, twice a week, and continue other remedies.

22d. Left eye better; pupil widely dilated by atropia. Right eye greatly improved; redness and photophobia less; cornea much clearer. Can now see the iris and pupil by oblique illumination; and find that the iris, as well as the cornea, has been invaded by the disease. The iris tissue is swollen, and infiltrated with lymph; and the pupil, which has been but little dilated by the atropia, and presents an irregular form, is occluded by a layer of the same. Ordered one or two drops of a sol. of atropia, gr. viij to 3j, to be dropped into right eye once a day.

April 9. Left eye free from inflammation, the cornea sufficiently clear to allow patient to read Jaeger No. 5. Vascularity of the cornea of right eyes has disappeared, subconjunctival congestion much less. The pupil, though very irregular, the margin of the iris being bound at several points, by tags of adhesion, to the anterior capsule of the lens, is slowly yielding to the atropia and its occlusion is less complete. She can distinguish with this eye several letters of Jaeger No. 21.

30th. Right eye steadily improving; pupillary adhesions giving way; lens capsule and the cornea clearing, and the sight is correspondingly improved, so that she can now read with it Jaeger No. 14.

She is still under treatment.

CASE VIII. *Recurrent interstitial keratitis in one eye—nebulous opacities in the other, from a former attack.*—A negro woman, aged about 25, came to Eye and Ear Dispensary, Feb. 7th, 1873. Right eye had been inflamed for several weeks; interstitial opacity of cornea so

great that iris could not be distinguished; redness and photophobia not very marked. T n. The left eye free from inflammation, but the slight nebulous opacities, to be seen in the cornea, gave evidence of former keratitis. The patient stated that both eyes had been affected before. The character of the teeth was not recorded. Ordered four powders, containing each hydrarg. chlorid. mit. gr. ij, pulv. scammonii gr. ij., pulv. rad. rhei gr. v. One to be taken every other night. Atropia to be instilled into right eye three times a day.

Feb. 14. Photophobia less. Appearance of eye unchanged. Ordered a combination of bichloride of mercury and syr. sarsaparillæ, to be taken three times a day. Continue atropia.

March 7. Eye greatly improved; redness almost entirely gone; cornea much clearer. Can now see iris and pupil distinctly. She is to take a second bottle of the syrup and bichloride, and use atropia night and morning. She has not reported since.

Two other cases came under my observation, but, as their histories are imperfect, we shall not relate them.

The foregoing cases are principally of interest, in so far as they afford additional evidence in favour of the propriety of considering interstitial keratitis as a distinct form of ophthalmia, occurring in the subjects of inherited syphilis. Let us see then to what extent they accomplish this.

In Cases I. and II. syphilis was known to have existed in the patients' parents. In the former I had the testimony of the physician, who had recently attended the father for tertiary syphilis, and in the latter, the confirmatory statement of both father and mother, that the mother had been inoculated with syphilis, previous to the birth of the patient. The subject of Case I., moreover, presented the characteristic teeth and physiognomy, had a history of infantile syphilis, and was, in accordance with the rule, the eldest child of the family. Besides the typical teeth, which were present in the subject of Case II., there was the usual family history of syphilis. First, after the inoculation, a miscarriage, the child being dead at birth and covered with a rash; then a child, born at full term, puny and delicate, also exhibiting a rash, and dying in infancy; and next, the patient having a rash in infancy, ozæna in childhood, and then keratitis. In both cases, after other remedies had failed, a specific treatment was followed by good results.

In Case III. the teeth were suspicious, though not typical; the family history strongly confirmatory, and a specific course of treatment very effectual.

In Cases IV. and V., where the appearance of the eyes, in two sisters, indicated former keratitis, the fact that they were the eldest of the family, and the only ones who had suffered with the disease, that the affection had been much more severe in the elder of the two, and that she moreover presented the characteristic physiognomy in a striking degree, and suspicious teeth, all pointed strongly to the probable influence of a specific cause. In Case VI. the teeth were typical; the physiognomy characteristic,

the bones of the nose having been destroyed by disease in infancy ; and, in connection with these, the family history so confirmatory, that the fact of the patient having been the subject of inherited syphilis is placed almost beyond a doubt. In Case VII. the evidence is equally conclusive. The subject of it presented the characteristic physiognomy and teeth ; had a clear history of infantile syphilis ; a family history strongly corroborative ; and the disease improved satisfactorily upon a specific treatment. In Case VIII. the character of the teeth, and the history of the patient, were not recorded. The strongest proof of the syphilitic nature of the affection being the prompt manner in which it yielded to specific treatment.

Of the eight cases, the evidence in favour of the syphilitic character of the disease, may be considered conclusive in four ; in all the others, except, perhaps, Case VIII., it is so convincing, as to render such a view of their nature more than probable. In view of what has been said in regard to the "peculiarity of distribution" of this disease, as well as of the notched and pegged teeth, which, as we have seen, are usually associated with it, Cases II. and VIII. (the subject of the former being a mulatto, and of the latter a negro) become of more than usual interest. I am not aware that any cases of interstitial keratitis, occurring in negroes, have been heretofore published, but I have lately heard of two other well-authenticated cases having been recently met with by a physician in this city ; so that it would seem probable that it is not more uncommon among the negroes, in this country, than among the whites.

So far as it is permissible to draw general conclusions from an experience extending over comparatively so short a period, I should be inclined to consider that this form of ophthalmia is quite as prevalent, and is as generally accompanied by the notched and pegged teeth, in this country, as in England. In regard to its prevalence in England, Mr. Hutchinson remarks, "to those whose field of observation does not include an ophthalmic hospital, it is a very rare disease. As some gauge of its infrequency, I may mention that at the Metropolitan Free Hospital, where the average daily admission of new surgical cases is between twenty and thirty, I have not had to treat more than one case a year."¹

At Moorfields, however, where Mr. Hutchinson is perhaps accorded by his fellow surgeons a larger share of these cases than would otherwise fall to his lot, I should think those coming under his care would average nearly one a week. By reference to my case books, I find that those which I have met with, represent between 3 and 4 per cent., or about one in thirty, of the various affections of the eye which I have had occasion to treat during the past and present year. That this, however, is an accidentally large average, I am inclined to believe.

It is worthy of remark, that, although, during this time, many cases of

¹ Op. cit., page 27.

scrofulous or phlyctenular corneitis occurring in children of German parentage have been encountered, I have not yet met with a single case of interstitial keratitis under such circumstances. On the contrary, the subjects of the latter disease, if I mistake not, were, invariably, the children of American-born parents.

In regard to the treatment of this affection, I need only say, that the administration of specific remedies for the purpose of correcting the constitutional taint is by far the most important part of it. The combination of hydrarg. bichlorid. and syr. sarsaparillæ, which I have generally used, has in my hands proved more effectual than mercury given alone. The efficacy of the famous French preparation, sirop de cuisinier, is due probably in great part to the presence of these two ingredients; but as the hydrarg. bichlorid. is said to be in time decomposed into calomel by the syr. sarsaparillæ, it is better that the bichloride in solution should be mixed with the syrup just before being administered. The iodide of potassium may perhaps be advantageously alternated with this combination. Whenever photophobia exists, as it almost always does during the earlier stages, the use of atropia, from one to two grains to the ounce of water, is indicated. And when the inflammation is intense, as shown by excessive subconjunctival injection, and vascular development in the cornea, we shall do well to use, with more caution, a much stronger solution, say from four to eight grains to the ounce; as we shall thereby diminish the chances of adhesions being formed between the iris and lens capsule, and of the pupil becoming occluded; results which may follow the supervention of iritis, which the opaque condition of the cornea prevents us from observing.

BALTIMORE, April, 1873.

ART. VIII.—*Simulated Amaurosis*. By GEORGE C. HARLAN, M.D.,
Surgeon to Wills (Ophthalmic) Hospital, Philadelphia.

Two years ago a girl eleven years of age, apparently in excellent health, was brought to me by her parents with the statement that they had recently discovered her left eye to be quite blind. She had been sent to the family physician, a homœopath, on account of a slight conjunctivitis, and, as the result of the consultation, had returned with this startling announcement. She denied even perception of light in that eye.

Never having met with a similar case, I failed to detect, or even suspect, the deception, but as a careful ophthalmoscopic examination revealed no lesion or imperfection of the organ, I assured the girl's parents that there was no present disease there and no indication for treatment. The other eye was found to be perfect in all respects, and I advised them to return her to school and pay no attention to the blind eye while the sight of the other remained unimpaired.

A few weeks since, she was again brought to my office complaining that the other eye was failing, the left still continuing stone blind. She said that the print looked blurred when she attempted to read, and her parents had noticed that she held the book nearer to the eye than usual.

She admitted a vision of $=\frac{20}{L}$ and with a $-\frac{1}{8}$ glass acknowledged to $\frac{20}{XL}$. A central limitation of the field of vision was very well counterfeited.

The result of a careful ophthalmoscopic examination was entirely negative. While I was engaged in recording her case, she amused herself by looking over the glasses in the trial case, and announced that the plain blue glass made a great improvement in her sight. This being the only discoverable indication for treatment, I ordered blue glasses. Not finding the large coquilles, with which the optician furnished her, becoming, she, at the next visit, denied that they were of any use. When directed to look at a distant gas-light through a prism, with its base upwards, held before the right eye, she at once acknowledged the double images, but when the attempt was made to separate the images by means of a coloured glass, her suspicions seemed to be aroused, and her answers were negative. When required to read the test letters at varying distances there were evident discrepancies in her answers.

The pretended amblyopia of the right eye precluded the use of any of the tests based upon the reading of ordinary type, and confined me to the large letters which she had acknowledged being able to recognize. I, therefore, placed the trial frames before her eyes with a plain glass in the left side and a convex one of ten inches focal distance in the right. The latter, without exciting her suspicion, excluded the right eye from any distinct vision beyond the focus of the glass. She still read No. L at twenty feet. Then having first substituted for the test card another with a different series of letters, I placed an opaque disk in front of the plain glass, and she could not make out a letter. This proved, at least, that she had been reading No. L at twenty feet with the eye that she pretended was not conscious even of the bright glare from the ophthalmoscopic mirror, and was quite enough to throw a degree of doubt, almost amounting to certainty, on all her statements.

She did not appear again, but her father called on me some days afterwards and reported that she had come home in a very bad humour, indignantly accusing me of having treated her with great injustice, but, the next day, had made admissions, which, though partial and constrained, were sufficient to convince him fully of the correctness of my view of her case.

The second case was seen in consultation with Dr. Goodman, and has been reported in the *Philadelphia Med. Times* for August 15, 1872.

A rather delicate looking boy, æt. 11, was represented to have become blind in the right eye about eighteen months before. After the disease had resisted the skill of the family physician for some months, the patient's father was recommended by his friends to "try electricity," and took him to a "professor" of that science. The result of one application was an entire restoration of vision. The cure lasted, however, only a few weeks, when the remedy was resorted to again with the same result as before. After this history had repeated itself a number of times, the father, as a measure of economy, invested in an apparatus of his own, and wound up his son's vision as often as it ran down.

When brought to us, the boy asserted that the eye was not conscious of the ophthalmoscopic examination, which, however, revealed nothing to account for the loss of sight. When a prism was placed before the left eye, he admitted

seeing two images of the gas jet which could easily be distinguished by a coloured glass, or made to unite by a corrective squint, when the base of the prism was held outwards. He was required to read with the prism still before the eye, and while he was disconcerted and thrown off his guard by being urged to read rapidly, a fold of paper was slipped in front of the left eye, and he continued to read with the right.

The father was quite sure that there was no motive for the deception. The fact that the boy's mother was blind of the right eye was a singular coincidence and perhaps had a psychological bearing on the case.

Though this form of deception has been occasionally met with among the strange vagaries of hysterical women, and has often been resorted to by men with some object in view, it is extremely uncommon in boys. I know of but one other case. It is reported by Galezowski in his recent work on diseases of the eye.

The patient, or rather culprit, was a boy of eleven years, and Galezowski considered it a plain case of malingering to avoid school. In this the young scamp was quite successful for a length of time, until he was finally brought to Paris for treatment, and exposed by the prism test.

In the notes of a third case I am indebted to Prof. D. H. Agnew.

"Miss M., æt. 18 years, had always enjoyed excellent health. One year before my visit she was thrown from a horse. A short time after this accident, a deep-seated soreness was experienced in the right iliac region. Five months afterwards a marked swelling made its appearance in the same locality, which disabled her from taking exercise and very soon confined her to bed. At the time of my visit, I found a conical enlargement, hard, sensitive, not movable, and quite the size of the closed hand. The patient was somewhat pale, passed restless nights, with febrile disturbance towards evening, but no chills. The menstrual discharge was regular, only somewhat profuse, and attended by pain for the first day or two. A vaginal examination revealed an undue fulness on the right wall of the canal, high up at its insertion on the uterus. Her appetite was capricious and her mental state somewhat depressed, though by no means despondent.

"I diagnosed a periuterine abscess, depending, doubtless, upon a cellulitis set up by the violent concussion to which the pelvic viscera had been subjected by the fall.

"After the lapse of about four months the abscess opened into the vagina, the external swelling subsided, and finally the discharge disappeared and the patient was apparently well. About this time a tooth which gave her a great deal of pain was extracted by her dentist while she was under the influence of chloroform administered by myself. She recovered quietly and fully from the anæsthetic and without any succeeding excitement whatever; in fact, her whole deportment, both before and after its exhibition, was cool and composed. The patient was now able to walk out, and was recovering her strength rapidly under a course of tonic treatment.

"Some weeks after this I was summoned to see her again. She had, in the course of a night, become entirely blind. Nothing had occurred the previous day to disturb either her mental or physical state. I watched her behaviour very narrowly, and certainly every movement betokened a freedom from all attempts at acting a part; and indeed, the uniform courage with which she had endured her protracted suffering, her strong common sense, and pure character, all conspired to convince me that there was no dissimulation in the case.

"The pupil responded promptly and naturally to light, the external appearance of the eyes was normal, and an ophthalmoscopic examination failed to detect any morbid change.

"Believing the case to be one of hysterical blindness, I so stated to her friends, predicting that her vision would be recovered—how soon I did not venture to affirm. She was advised to continue the tonic treatment and use the shower bath.

"For some time she was led by her sister, until her familiarity with the house became such that she could move without assistance. Often did I watch her, when entirely ignorant of my presence. With elevated head, open eyes, advanced and oscillating arms, the feet sliding along, would she thread her way about the room until the object which brought her in had been obtained. So convinced was I of the real nature of the delusion, if it may be so called, that I resorted to no test to detect simulated blindness.

"After she had been in this condition four weeks, the spell was dissolved as suddenly as it came; and her vision, which disappeared in a night, returned in a night."

No motive for deception could be discovered in any of these cases, and in the absence of other explanation, we are forced to fall back upon the term "hysterical," which is often another word for inexplicable, or they may be classed among the cases "which indubitably show that the simulation of disease has frequently been practised without the existence of any interested motive, indeed, without motive of any kind; that there is in short a species of moral insanity of which this simulation is the characteristic." This view seems to apply particularly to the case reported by Dr. Agnew, who had enjoyed unusual opportunities of becoming familiar with the previous character and disposition of his patient, and watched her with a great deal of care. Is it possible that she could have been psychologically blind—in a kind of visual trance—that the act of vision was carried as far as anatomy and physiology could take it, but the disordered mind refused to receive its impressions, and that she really could not or did not see? In the use of monocular optical instruments, we can easily, after a little practice, disregard and suppress the images on the retina of the eye not in use, and in strabismus when, to avoid diplopia, the images of one eye have been neglected, it becomes amblyopic without disease. Such facts show that it is possible for images correctly formed upon the retina not to result in vision, though the eye and nerve and brain may be healthy, and suggest the possibility of a mental suppression, as we often have a mental perversion, of vision. It is after all, not more mysterious that the mind should disregard the images of real objects than that it should conjure up images of objects that have no existence.

Perhaps it may, in some cases at least, be more scientific as well as more just, to consider "hysterical blindness" a real mental disease, rather than the mere whimsical counterfeiting of a symptom.

It is probable that cases of simulated blindness are more frequent than the space accorded to the subject in the text-books of ophthalmic surgery,

some of which do not even mention it, would lead us to suppose. Doubtless they might afford an explanation of a good many mysterious cases, and not a few wonderful cures.

Military surgeons have, from time to time, given a good deal of attention to the simulation of blindness, with an evident motive, by malingerers. Probably the art of malingering was developed to its highest perfection among the French soldiers, by the ruthless and sweeping conscription of the First Empire, when even Frenchmen began to feel that "la Gloire" was too dearly purchased, and Fallot says: "There is no disease more frequently pretended than amaurosis by those who desire to withdraw from military service, and it is almost always the right eye that is said to be affected." Though a good deal of ingenuity was devoted to the art of "old soldiering" during our late war, it does not seem to have taken this direction to any great extent. I can recall only one case, which was detected by Dr. Dyer, by means of the prism test, at the Satterlee Hospital, and reported by Drs. Keen, Mitchell, and Morehouse, in an article on malingering in the number of this Journal for October, 1864. It is not unlikely, however, that there may have been some cases of the kind among the fifteen hundred and twenty-two men reported on the sick list with "amaurosis," five hundred and fifty-six of whom were discharged. In the examination of a number of applicants for pension with alleged injury or disease of the eyes, I have not met with any case of feigned blindness, but several have attempted to take advantage of errors of refraction by attributing their defective vision to some disease or exposure encountered in the service.

A number of tests have been proposed for the detection of feigned blindness.

Gavin, in his work on *Feigned Diseases*, published in 1843, has a very interesting chapter on amaurosis. Though no one of the means of detection in use at that time was at all certain in itself, and few of them would be worth resorting to now, he shows that experienced surgeons managed to reach a much greater degree of precision than most of us would be likely to attain to if deprived of our test-types, ophthalmoscopes, prisms, stereoscopes, etc. The use of mydriatics seems to have been quite common among army malingerers. The story is told of a French conscript who had dilated his pupils widely with belladonna, and was so determined in his deception that when a sharp instrument was approached to the eye as if to be plunged through the cornea, neither head nor eye stirred, but the palpitation of his heart betrayed him.

When one pupil only is dilated, the use of belladonna may be detected by the refusal of the pupil to act in unison with that of the other eye, which it does almost invariably in true amaurosis. This, of course, presupposes the integrity of the third pair of nerves, for cases of mydriasis, from paralysis of the sphincter pupillæ, are frequently met with in which distant vision, at least, is unaffected. I have recently had under treatment

at the Wills Hospital three or four cases which presented no other symptom than mydriasis and paralysis of the accommodation, and which differed in no respect, except in persistence, from the action of atropia. It has been suggested, in cases of doubt, to puncture the anterior chamber and test the aqueous humour for the presence of atropia by applying it to a healthy eye.

Snellen's test types afford a simple and valuable means of detection when a diminution only, and not an entire absence of, vision is pretended. If No. XL., for instance, can be seen at ten feet, No. LXXX. should be seen at twenty feet and No. XX. at five feet. The great frequency of errors of refraction must, however, be taken into account. A myopic eye might very well be able to distinguish No. XX. at five feet and fail to read No. LXXX. at twenty feet, or the near vision of an hypermetropic eye might not correspond to the acuteness of its distant vision, while astigmatism would account for a much greater degree of amblyopia and a greater amount of seeming contradiction in the answers of the person examined.

For simulated monocular blindness, Graefe's prism test is a very convenient and useful one. If a prism, held before the eye in which sight is admitted, causes double vision, or, when its axis is held horizontally, a corrective squint, vision with both eyes is rendered certain. It must be remembered, however, that a useful degree of vision is not thus proved; it is only shown that the eye can see, but how much it can see must be determined by other tests. It should also be borne in mind that the failure to produce double images is not positive proof of monocular blindness, for it is possible that the person may see with either eye separately but not enjoy binocular vision, as in a case of squint, however slight.

A test recently suggested by Warlomont is so absurdly simple that it seems almost inconceivable that no one should have thought of it before, but it has proved conclusive, even as legal evidence. Displace the optic axis by slight pressure with the finger upon the eyeball, and show the suspected person two small dots on a piece of paper; if he says there are four, he is at once convicted.

Javal's test is almost equally simple. Cause the person to read while a ruler is held three or four inches from the face and directly in front of the nose, then close the blind eye, and, as part of the print will be concealed from the other one by the ruler, it will be easily shown that he has been seeing with both.

The stereoscope affords a very elegant means of detection. If the two fields are united, binocular vision is, of course, proved. We may even test each eye separately, independently of simultaneous vision by both, as recommended by Schweigger. (*N. Y. Med. Journal*, February, 1866.)

"If we draw in each separate field of vision that vertical line whose image goes through the centre of the retina, then, in the united stereo-

scopical field, not only both lines are seen as one, but every object situated on the right of one of these lines is projected to the right side of the field of vision and appears as if it were seen by the right eye. The same, of course, is the case with the left side. This gives the means of determining, in simulated monocular amblyopia, the acuteness of vision, and, if we choose, even the range of accommodation. For this purpose we arrange matters as follows: we have at the bottom of the stereoscope a sheet of paper marked only with the two lines above mentioned, now, if we have to deal, for instance, with an alleged amblyopia of the left eye, we place in the left field of the stereoscope, but to the right side of the vertical line, any object, say a piece of printed paper; with this exception, the whole of the bottom of the stereoscope is left blank. In the united stereoscopic field the paper will then appear as on the right side, and will make so strong an impression that it is seen with the right eye, that I doubt whether anybody can resist it. With a stereoscope which allows the convex lenses to be approached to, or withdrawn from, the bottom of the stereoscope, we can, if we choose, at the same time, ascertain the range of accommodation."

This plan has the advantage over that recommended by Laurence, by means of optical transposition of words upon the stereoscopic slide, in the fact that it renders us independent of binocular vision.

When blindness of one eye only is alleged, if the different tests are skillfully and perseveringly varied and combined, a very considerable knowledge of optics, more than is likely to be devoted to such a cause, would be required to escape conviction.

Fortunately the simulation of complete blindness of both eyes involves so many inconveniences that it is not often resorted to. No optical test can, of course, be applied to it. Patient waiting and careful watching will usually discover such a case. Dr. Hutchinson's success in speedily and permanently curing a case of deaf dumbness by means of etherization (*Am. Journ. Med. Sci.*, April, 1864) might suggest a trial of that means. As the effect of the anæsthetic passed off, the patient would probably recover the power of vision before his consciousness was sufficiently restored to enable him to resume the deception.

This plan was recommended in the article on malingering, referred to above, but I am not aware that it has ever been practised.

ART. IX.—*Poisoning by the Rhus Toxicodendron*. By SAMUEL C. BUSEY, M.D., one of the Physicians to the Children's Hospital, and Physician in charge of the Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C.

THE influence upon the human skin, of the poisonous principle of the *Rhus Toxicodendron*, has been long known and frequently discussed, but until the investigations of Prof. Maisch into the nature of the toxic principle, and of Prof. White into the clinical and pathological phenomena of the disease produced by it, but little had been known regarding these questions. These very elaborate investigations leave but little opportunity for original research, hence the record of my own experience and observations can prove interesting so far only as they may corroborate the conclusions of these distinguished gentlemen, or more definitely settle hitherto disputed points.

As it is my purpose to discuss the subject in its clinical and practical aspects, I omit any description of the well-known natural history and botanical character of the plant, and proceed with the detail of the cases, which will illustrate the peculiar characteristics of the disease.

CASE I.—In June, 1871, Mrs. V. suffered very severely from a burning and itching eruption covering her entire face, neck, both mammæ, external genitals, extending along the inner surface of both thighs, both hands, wrists and portions of her abdomen. Her husband, at the same time, suffered with a similar eruption, though not so severe, on both hands, and an infant had it very slightly about the mouth and chin. A week previous to the appearance of the eruption, the husband and wife had passed an afternoon at a pic-nic, and he had fastened his horses to a bush covered with a vine, the character of which he had not observed. The wife did not approach the plant, and the child had been left at home. The disease ran its course, terminating in desquamation, without any benefit from treatment. Her suffering was so intense for several days that I was compelled to keep her under the influence of morphia.

On the 6th of May, 1872, the eruption again broke out, appearing simultaneously in all the localities attacked the previous year. It began with swelling, redness, intense burning, and itching. During the subsequent twenty-four hours, the inflamed surfaces became densely covered with very minute vesicles, which soon ruptured and poured out very copiously a yellowish serous fluid, which collecting in the most dependent parts desiccated into amber-coloured, semi-translucent incrustations. Saline purgatives and diaphoretics were given without any manifest effect. Applications of oxide of zinc, benzoated zinc ointment, glycerine alone and in combination with borax and camphor water, lotions of the acetate of lead, and various other sedative compositions were equally futile in mitigating the tormenting burning and itching, or in staying the progress of the disease, until finally, after two weeks' duration, relief was secured with a wash of glycerine, \mathfrak{z} ijss, solution of carbolic acid \mathfrak{z} ss, which was applied to the entire inflamed surface, with a soft sponge. From the first application

the exudation, swelling and inflammation gradually diminished, though for a few seconds after the first application, the burning and itching were slightly augmented. Desiccation and desquamation soon took place, and the patient recovered entirely. No trace of disease remained to mark its localities.

On May 31st, 1873, the eruption made its appearance for the third time, the notes of which attack are as follows:—

May 31. Complaints of burning and itching on the right temple, extending to the outer canthus of the right eye, slight redness, but no swelling. Applied the benzoated zinc ointment.

June 1. Right eye entirely closed, swelling extended along forehead and to left cheek, partially closing left eye, also down right cheek to lip. Swollen surface inflamed, firm and inelastic; no pitting. The part first attacked covered with minute vesicles; exudation very copious and seems to irritate the inflamed surface. Burning and itching intense. No fever. Discontinued the ointment and ordered applications, with a camel's hair pencil, of the glyceratum amyli every few hours.

2d. Swelling about eyes slightly diminished. No extension of redness. Right cheek, brow, and right upper eyelid covered with vesicles. Exudation very copious; no burning or itching; no constitutional symptoms; slept well previous night; ordered entire inflamed surface to be thoroughly washed with soft soap, and then dressed, as before, with the glyceratum amyli. At my afternoon visit the swelling had extended down the right side of the face, under the right lower maxilla and chin, but had diminished about the right eye. Exudation very copious, no extension of inflamed surface; the extended swelling being natural in colour; ordered the washing with soft soap to be repeated, to be followed with free bathing of the entire tumefied surface with a solution of the bicarbonate of soda, and after drying of the surface, a reapplication of the glycerate.

3d. Swelling very much diminished; can open both eyes; exudation much less; some burning and itching around left eye, about which there is considerable tumefaction with inflamed surface, but no vesicles or exudation. The swelling about the jaw and chin remains normal in colour. The areas of redness and vesication have not extended; treatment continued.

4th. Swelling and inflammation considerably diminished.

5th. Tumefaction and inflammation diminishing very rapidly, none on lower part of face. Exudation less; none from some parts. On right cheek, which is but slightly swelled and less inflamed, are a few scattered milky-coloured pustules, much larger than the vesicles. Desiccation commenced in parts; she continued to improve rapidly and was soon entirely well.

CASE II.—Mr. O. C. G. was exposed to the poison on the 31st May. On the morning of the 2d of June discovered a blotch of redness with very slight swelling extending in a fan shape from the root of the nose towards the hairy scalp. In the afternoon the tumefaction had increased, and felt hot.

June 3. Face very much swollen and disfigured; both eyes closed; on the right temple a circular blotch of redness slightly elevated, itching and burning intensely; on the neck just above the middle of the right clavicle an oblong patch of similar character; on the afternoon of the same day the circular blotch was thickly covered with very minute vesicles, and vesication had commenced on other parts of the inflamed surface; no exudation; no constitutional symptoms; appetite good; ordered the parts to

be washed with soft soap, dried and then bathed with a solution of the bicarbonate of soda, and subsequently protected with the glyceratum amyli.

4th. Exudation quite free, but not copious; no extension of tumefaction or inflammation, slight burning at some points but no itching; treatment continued.

5th. Improvement very marked; can open both eyes; no extension of inflammation, tumefaction, or vesication since commencement of treatment. Exudation greatly diminished; no burning or itching. Examination with a magnifying glass detects no vesicles, where not visible to the naked eye. The patches of vesication present a milky whitish appearance, and under the magnifying glass the vesicles seem collapsed, presenting closely aggregated curdy whitish points. Small patches of vesication on the dorsum of right hand, and dorsal aspect of several fingers exhibit vesicles much larger than any which have appeared on the face. They are limpid at their apices. The fluid, when discharged by puncture, is limpid and transparent, changes blue litmus paper to a deep blue, which fades after drying, leaving no trace of discoloration. Suspended the glycerate.

6th. Swelling and inflammation subsiding rapidly; desiccation established; desquamation commenced on the 7th, and was completed on the 10th.

CASE III.—In the spring of 1865 I attended a lady who, a few days after exposure to the poison, suffered with swelling and inflammation of her right cheek, attended with intense burning and itching. The inflamed surface was covered with large blisters, containing a yellowish serous fluid. In the succeeding spring she was seized with a precisely similar attack, without being able to trace it to any renewed exposure to the poisonous plant.

The perfect insusceptibility of some individuals and peculiar susceptibility of others is very remarkable. One may require the direct application of the expressed juice or of the distillate to produce its local effects. Another will resist the toxic action however applied. A third will suffer to an intense degree from simply going in the vicinity of the growing plant, and, occasionally, persons are so easily affected that the smoke of the burning plant will poison them. Prof. Maisch¹ mentions the fact that several persons who entered his laboratory while he was engaged in his experiments, "were more or less poisoned by the vapours diffused in the room."

Another of its peculiarities is the readiness with which it can be conveyed to other parts of the body by the contact of the part which may have received the poison from the plant, and from one individual to another, even though the first may not, or very slightly, suffer from its poisonous action. The cases of the wife, husband, and child, before recorded, fully illustrate this characteristic. The wife's face may have received the poison direct from the plant, though she denied having been near it; but it is impossible that the parts of her body under the clothing,

¹ Am. Journal of Pharmacy, vol. xxxv. p. 10.

and the child, could have been thus affected. As her hands and wrists were poisoned, it is possible that she conveyed it to the other parts; but it seems more probable that it was conveyed by the hands of her husband. I have several times treated cases illustrating this peculiarity. Two years ago a gentleman residing in the suburbs of the city suffered from the characteristic eruption on his hands and genitals. His story was, that after handling the plant, and previous to washing his hands, he had poisoned his penis and scrotum. The appearance of patches of eruption, in the case of Mr. O. C. G., below the collar, is, also, evidence of its conveyance. Prof. Maisch¹ says he "has transferred the poisonous effects to some other persons by shaking hands with them," and Prof. White² reports the case of a child six years old, who contracted the disease from a servant boy (himself not susceptible), whose hands came in contact with the child several hours after having been engaged "in pulling up some of the plants," and had been thoroughly washed "with hot water and soap, and afterwards with vinegar."

Sometimes I have thought the disease was extended by permitting the exudation to flow upon healthy parts, but more careful observation has satisfied me of its innocuousness, at least when applied to a healthy skin, though it is possible the area of erythema may be extended over surface already tumefied. Prof. White and Dr. Pierson failed to produce the disease by inoculation. The exudation, whether from a recently punctured vesicle, or from the surface, will deepen the colour of blue litmus paper, but the changed colour disappears with drying.

Profs. Maisch and Proctor think the morbid phenomena speedily succeed the application of the poison; the former asserts that while operating with it "a copious eruption and the formation of vesicles" occurred on parts exposed to the plants. Griffith says the symptoms are manifest within a few hours after exposure; others concede that several days may elapse. I am convinced that in many cases a week will pass before the appearance of the local symptoms, and the cases are very rare where any morbid condition is apparent within 48 hours. This difference may be due either to the varying susceptibilities or degree of concentration of the toxic agent.

In many cases the disease will run its course in a week, but occasionally it will continue through a month. Griffith³ says the eruption may continue a long time; one "set of vesications succeeding another, so as to protract the disease for an indefinite time." And Prof. White thinks it usually lasts from ten to fourteen days.

Griffith very correctly describes the symptoms as "violent itching, redness, and tumefaction of the parts, especially of the face, succeeded by heat,

¹ Am. Journal of Pharmacy, vol. xxxviii., p. 10.

² N. Y. Medical Journal, March, 1873. ³ Griffith's Medical Botany, p. 185.

pain, vesication, and fever." I do not think the last is often present, except in cases where there is considerable surface involved.

The vesiculation is always uniform in the same person. Generally is in circumscribed patches of closely aggregated minute vesicles, sometimes covering only small portions of the inflamed and tumefied surface. Occasionally the vesicles are very large, looking like blisters.

Prior to the investigations of Prof. White this affection was almost universally regarded as an erysipelatous inflammation. He insists that the "tissue-changes are always of an eczematous, never of an erysipelatous nature." It has seemed to me to present a combination of some of the symptoms of acute eczema and of erysipelas. The character of the eruption, enormous tumefaction, extent of inflammation, degree of infiltration, copiousness of the exudation, proneness to and rapidity of extension beyond the precise limits to which the poison may be applied, and the absence of any marked constitutional symptoms seem to impart to it an individuality.

To a practised eye the diagnosis is not difficult. Particular attention to the essential characteristics, sufficiently set forth in the clinical histories of the cases reported, and to the history of the case, will enable any one to differentiate it from either eczema or erysipelas.

I have witnessed none of its sequelæ, other than the annual recurrences of the characteristic eruption. Cases of acne, chronic eczema, and other chronic cutaneous diseases have been ascribed to the Rhus poison. Long continued and indolent ulcers have also been traced to the same cause, but with the exception of a single case, where slight superficial ulcers marked the localities of several large blebs, and which left, after healing, white spots, I have witnessed nothing of the kind.

Prof. White failed to find a single recorded case of the poisonous action of the Rhus upon the lower animals. Stillé, however, at page 683, vol. 1., *Therapeutics and Materia Medica*, refers to several cases where dogs were fatally poisoned by its internal administration, and one by exposure to the poisonous emanations.

When taken internally its action is that of an acro-narcotic. Introduced in 1788 by Dr. Fresnoi, as a remedy in chronic cutaneous diseases, it has been frequently employed since with varying success in the treatment of certain nervous affections, but seems to have gone entirely out of use.

Dr. Stokes¹ reports three cases of rhus poisoning from drinking the tea made of the root, in one of which the characteristic eruption appeared upon the skin. Dr. Moorman² also reports two cases, poisoned by eating the berries. In the Report on Botany, vol. 5, p. 755, *Transactions of the Amer. Med. Assoc.*, the case of Mr. Wilkes, a medical student, is referred to. To test the toxic effects of the Rhus, he took after supper a gill of the strong decoction of the leaves and vine. He was much swollen

¹ Medical and Surgical Reporter, 1867, p. 373.

² American Journal of Medical Sciences, April, 1866, p. 560.

the next morning, and continued to swell until relieved by a wash composed of the bichloride of mercury and hydrochlorate of ammonia. All these cases recovered.

All the cases of Rhus poisoning which I have seen occurred during the spring or summer or autumn months, most usually in the spring. It is maintained, however, that the bark and wood contain the poisonous quality, which it will impart at any season of the year, and that persons may be poisoned by the exhalations into the room while the wood is burning in the fire.

Treatment.—Several indigenous plants have been highly extolled as specifics for the disease. Dr. Stokes¹ claims to have frequently cured cases with one or more applications of the juice or sap of the *Urtica pumila*, commonly known as the bastard nettle; and Dr. Canfield² asserts he has invariably succeeded with the local application of the balsam-like juice of the *Grindelia hirsutula* and *robusta*, a perennial found in California. The *Rhamnus oleifolius* has also been recommended. Dr. Livezey³ has obtained satisfactory results from the tincture of lobelia, and Dr. Risk⁴ has never failed with the decoction of white-oak bark. Dr. Dunn⁵ has had equal success with the decoction of the leaves of the cotton-wood. Prof. White refers to the supposed special power of a decoction of serpentaria, and Dr. Clark⁶ has found an infusion of coffee beneficial. Many other remedies have been used, but their claims to confidence are very slight.

Since the discovery by Prof. Maisch that the toxic quality was due to an acid, which he denominated toxicodendric acid, the treatment has been based upon a true scientific basis. Previously it was entirely experimental, and many curious formulæ have been suggested as infallible cures. It is curious to observe how gradually and truly domestic empiricism approached the correct principles of treatment, for, long before the investigations of Prof. Maisch, or even of Khittle, who claimed that the poisonous agent was a volatile alkaloid, ammonia, soda, potash, sugar of lead, soft-soap, and common salt had been extensively employed as domestic remedies.

The very decided curative properties of the alkalies are well exemplified in the cases of Mrs. V. and Mr. O. C. G. In both cases the duration of the disease was cut short, more markedly so in the latter case. The pathological phenomena were arrested at that stage and confined to the precise limits which they had reached at the time of the first application. In the case of Mrs. V. the swelling extended after the first washing with soft-soap, but was unaccompanied with any inflammation.

¹ Medical and Surgical Reporter, vol. xxx. p. 542

² American Journal of Pharmacy, vol. xxxii. p. 414.

³ Boston Medical and Surgical Journal, vol. i. p. 262.

⁴ Cincinnati Medical Repertory, July, 1871.

⁵ Medical and Surgical Reporter, vol. xxiv. p. 195.

⁶ Boston Medical and Surgical Journal, vol. liii. p. 163.

There appears to be some other element of disease besides the mere local toxic effect of the acid, or how account for the extension beyond the limits of the direct application of the poison? It extends by continuity, and the alkalies seem to possess an equally satisfactory influence in arresting the morbid condition in such parts. The cases reported by Dr. Stokes and the case of Mr. Wilkes would seem to suggest the conclusion that it will produce its local cutaneous effects through absorption into the blood.

Glycerine will sometimes relieve the burning and itching. Its influence is, however, simply palliative. The glyceratum amyli relieves the intense local suffering, and affords sufficient protection to the inflamed surface without obstructing the view of the parts.

The beneficial results, ascribed by several writers to cold lotions of sugar of lead, are, I think, due entirely to its cooling and perhaps astringent properties. With me it has not yielded any direct curative results. Prof. White, however, claims that it precipitates with the toxicodendric acid "an inoffensive, harmless salt."

I have only treated the disease during its acute stage, and hence cannot determine the value of the alkalies and other suggested remedies in the treatment of the chronic form. The first and second attacks of Mrs. V. ran their course, unless the second was arrested by the application of glycerine and carbolic acid. Washes of the mild and corrosive chloride of mercury have seemed to afford the surest hopes of success when the alkalies have failed.

I have found but two fatal cases recorded.

ART. X.—*Case of Erysipelas followed by Puerperal Peritonitis.* By J. B. CRAWFORD, M.D., of Wilkes-Barre, Pa.

THE question whether puerperal peritonitis is related to, and dependent upon, the virus which engenders erysipelas has elicited much discussion among practitioners of midwifery as well as among pathological writers; and although much, and convincing, evidence has been adduced in confirmation of the supposed relationship, its existence can hardly as yet be regarded as a settled pathological fact. As a contribution to the evidence in favour of the identity of origin of the two diseases, I will relate a case which recently occurred in my own practice.

Mrs. O——, aged about twenty eight years, received a slight wound on the forefinger of the left hand from a butcher-knife, while engaged in some domestic duty. On the following day a peculiar redness was noticed about the seat of the wound, attended with considerable swelling and much pain. Slight chills, with flushes of heat, supervened. These symp-

toms increasing in severity for three or four days, I was called to see her on Tuesday, April 15. Severe erysipelatous inflammation extended over the fingers, hand, and forearm. The finger on which the wound had been received presented a dark, livid appearance, evidently bordering on gangrene. This was probably due to the finger having been tightly bandaged at the seat of the wound for the first twenty-four hours, for the purpose of preventing hemorrhage. An abscess had formed, near the metacarpophalangeal joint, which was opened, giving exit to a considerable amount of pus, and affording marked relief to the patient. I ordered a poultice to be applied to the finger, iodine and acetate of lead to the hand and forearm, and quinia in full doses to be administered.

Erysipelas was at that time epidemic in the neighbourhood in which Mrs. O. resided. Malarial fever had also been rife there for a long time. Numerous pools of stagnant water, the receptacles of all the refuse materials of the neighbourhood, were situated in that locality.

I was informed by Mrs. O., that she had for some days expected her confinement, and wished to engage my services for that occasion. To this I assented, but with many and serious misgivings as to the result of her case. I warned my patient of the danger of any contact of the hands with the genital organs, and directed that the utmost care be taken to avoid such contact, and to obviate, so far as possible, any other medium of contagion. On the following day I found the patient with symptoms but slightly relieved. The abscess was discharging freely, the swelling of the hand and arm had diminished but little, the pulse continued at about 108 per minute, and the temperature, now for the first time noted, stood at 101° F. *No abdominal tenderness could at that time be detected.*

On the following morning, April 17, I was called to Mrs. O. and found her in labour. Slight pains had begun some three or four hours previously, when she noticed for the first time a decided tenderness over the abdomen. After a short and not unusually painful labour she was delivered of a large, healthy child. I noticed, on my arrival this morning, a marked subsidence of the erysipelatous symptoms about the hand and arm. The distal extremity of the finger was decidedly gangrenous, and a plain line of demarcation had formed around the finger at the seat of the wound.

At the close of labour the abdomen was exceedingly sensitive to the touch over its entire extent. So decided, at this time, was the peritoneal tenderness that the patient was unable to extend the lower limbs. Even the pressure of the bedclothes was complained of; the temperature was now 104° and the pulse 115 per minute; morphia in full doses was ordered in addition to the previous remedies.

On the following day, the inflammation of the hand and arm had almost disappeared. The patient complained less of abdominal tenderness (due, probably, to the morphia), had slept for several hours; slight lochial discharge continued, the temperature remained nearly the same as on the previous day and the pulse had increased to 120 per minute.

On the 19th, I found the pulse had risen to 130 per minute, and the temperature had advanced to 106°; slight delirium was noticed: otherwise little apparent change since previous day.

On the 20th a marked increase of all the previously noted abdominal symptoms was apparent. The pulse had increased to 150 per minute, and the temperature had risen to 108°, no secretion of milk had taken place, and the lochial discharge had disappeared.

On the 21st, the patient continued nearly the same as on previous day, showing, however, an increase of delirium and a diminution of vital power. The pulse and temperature continued at their former height, although the patient was bathed in a profuse perspiration.

On the morning of the 22d, I found her rapidly sinking—the pulse feeble and rapid—delirium, tending to stupor,—marked tympanites and a diminished temperature (103°) were the principal features noted. She died about noon; no autopsy was allowed. The child, when last heard from, remained well.

Although births were quite numerous in our city at about that time, I am not aware that any other case of puerperal peritonitis has recently occurred. I attended two other cases of childbirth during the time of attendance on Mrs. O. Both did well. I used extreme caution, however, in regard to the possible conveyance of the disease—making free use of carbolic acid, and even changing the clothes which I had worn on visiting my first patient before visiting the others.

It will be observed that a sudden recession of erysipelatous inflammation of the hand and arm, and as sudden a development of inflammation in the peritoneum, were synchronous events. Was not this a transposition or metastasis of erysipelas from the former to the latter organ? Whether it was really this, or whether the virus of erysipelas was conveyed to the abdominal cavity through the medium of the genital organs, it would be difficult in this case to determine with absolute certainty. The utmost caution, however, was taken to prevent the possibility of such conveyance of the virus. It is to be noted, too, that peritoneal inflammation was already developed at the beginning of labour. I could detect no evidence of inflammation of the uterus during labour. Its contractions, its sensibility, and its secretions at that time all seemed normal. As the lochial discharge occurred during the first twenty-four hours or more after delivery, and then ceased, it would seem as if the morbid action had extended from the peritoneum to the uterus, instead of taking the opposite course.

It is well known that a sudden recession of erysipelas of the face is occasionally followed by an equally sudden inflammation of the meninges of the brain or of the mucous lining of the air passages; thus proving that in the erratic shiftings of that disease it may fix alike upon the dermal, the mucous, or the serous tissues.

In view of all the facts of this case, I cannot resist the conclusion that the disease of which Mrs. O. died was a transposition of erysipelatous inflammation from the hand and arm to the abdominal cavity.

REVIEWS.

ART. XI.—*The Report of Columbia Hospital for Women and Lying-in Asylum, Washington, D. C.* By J. HARRY THOMPSON, A.M., M.D., Surgeon-in-Chief. With an Appendix. 4to. pp. 430. Washington: Government Printing-Office, 1873.

SINCE the close of our late war we have become accustomed to receive official medical publications from Washington. These are always welcome because the labours of Drs. Otis, Woodward, and Billings, of the Surgeon-General's Office, are acknowledged to add lustre to American medical literature. These officers are engaged in the National service, have devoted themselves to analyzing and drawing the deductions from observations made during the late unhappy contest, and it is proper that the results of their labours should be published by the Government and distributed as widely as possible among American medical men. Indeed it is a demand which science may legitimately make for the terrible and wanton sacrifice of human life upon many a bloody battle-field.

Before us is another candidate for professional favour from the city of Washington. It is the report of the Columbia Hospital, an institution of which we confess we knew nothing till this book was placed upon our table. It has been favoured by official patronage, and under the auspices of the Secretary of the Interior its report has been published and sent gratuitously to gynecologists throughout the land. We are not told what claim the institution has upon the general Government, that our pliant Congressmen should have appropriated funds from the public treasury for its maintenance and the publication of its report in so costly a manner, and it would be of no little interest to learn what influences were brought to bear upon Congress to cause it to set apart a portion of the money in the nation's vaults for a hospital for lying-in women and for the relief of diseases peculiar to her sex. The gallantry of Congressmen has undoubtedly got the better of their judgment in this instance, and, no matter how laudable the object may be from a private point of view, the people have a just right to complain at this misuse of the public funds. Hospitals, because they are located in Washington, have no more right to Congressional support than those of Philadelphia, New York, Chicago, San Francisco, or New Orleans. If the principle which has operated in the present case is carried out in this age when so many worthy institutions are seeking aid, the national treasury will be rapidly depleted. But since this hospital is supported by, and its report published at the expense of, the public funds, and published in a style similar to that of the able circulars issued from the Surgeon-General's Office, the American professional public are naturally led to expect a production of more than ordinary merit.

The first part of the report, that pertaining to the *in* department of the Columbia Hospital, appears to have been written by Dr. J. H. Thompson, the Surgeon-in-Chief. It opens with an article on the operation for the cure

of ruptured perineum, giving the results of fifty-three cases, all of which were successful. So far as the paper is concerned, no new principles are inculcated, and Dr. Thompson's method of operating is essentially that of the late Mr. Baker Brown, of London. He, however, departs from the teachings of his master in the management of the sphincter ani, which he does not divide, "unless it has been torn through anteriorly." On the contrary, he adopts the plan of Van Buren, of New York, and paralyzes the muscle by introducing the thumbs into the anus and stretching it thoroughly. Instead of using pieces of bougie for quills, as directed by Mr. Brown, Dr. Thompson employs hard rubber tubes, perforated at intervals for the reception of the wires. These are minor changes, and it is not worth while to discuss their merits; but it is questionable whether this plan is preferable to the simpler one recommended by Dr. Agnew (*Pennsylvania Hosp. Reps.*, 1868, vol. i. p. 36), with whose papers the author does not seem to be familiar.

Dr. Thompson coaptates the parts by tightening the middle suture first and afterwards those towards the anus; lastly, those next the fourchette. Prof. Agnew, whose important papers on this subject leave little more to be desired, insists (*American Supplement to Obstetrical Journal of Great Britain and Ireland*, June, 1873, p. 33) upon the importance of tightening the anal suture first and approximating the parts from behind forwards.

In relation to after-treatment, Dr. Thompson differs from many surgeons of the present day in eschewing the use of opium to keep the bowels constipated. On the contrary, he keeps the discharges soft and secures a passage every day. Several years have passed since the writer began to question the propriety of administering opium after operations on the female genital organs, and a remark of Mr. Spencer Wells (*Diseases of the Ovaries*, London, 1865, p. 31) in relation to its use in cases of ovariectomy confirmed this opinion. The writer believes that he has seen operations fail several times, because the opium given deranged the patient's digestion and induced a condition of system which was not favourable to the repair of local injuries.

In regard to the causes of rupture of the perineum Dr. Thompson adds nothing to our knowledge, nor does he give much prominence to any special cause. If importance is attached to any, it appears to be the forceps. As a hearty admirer of this instrument, we are glad to see that he has qualified what he has to say by employing the words, "unskilful use of the forceps." This is wise, for when properly applied, these prevent and do not cause rupture of the perineum. Properly used they give the accoucheur complete control of the descending head, and in the hands of a skilful operator, danger of injury to the perineum would be an indication for their application. Of much greater importance is "unusual width of the child's shoulders in proportion to the size of the head." Dr. Thompson would have done well to have laid stress upon this cause, which is dismissed with the words just quoted. Our own observation in hospital and in private practice has led to the conclusion that the integrity of the perineum is much more frequently destroyed during the birth of the shoulders than the head. This does not always depend upon "unusual width of the shoulders in proportion to the size of the head," but upon the inattention of the accoucheur, who, knowing the danger, has carefully watched the painful throes attending the birth of the head, and who, as is not unnatural, has relaxed his watchfulness during the few suc-

ceeding moments, in consequence of which, he is surprised by a sudden uterine contraction which drives the body into the world before the shoulders have rotated properly. The danger at this stage of labour might have been more strongly insisted upon, especially as it is by no means so generally recognized as that attending the birth of the head.

The reports of the thirty-four cases of rupture that follow are fairly well written, but on the whole the paper adds but little to our knowledge upon this subject.

Dr. Thompson's second article is upon Vesico-Vaginal Fistula, and comprises eleven of his quarto pages. Four of these are occupied by the histories of two instructive cases, and the remainder is made up of quotations from well-known authors, and for the reproduction of which the overburdened tax-payers are compelled to pay. However, we have less right to complain in this than in other similar instances, for, in our opinion, the matter from the middle of the 45th to the bottom of the 52d page forms the most interesting portion of the book. It comprises the history of Sims's efforts to cure this dreadful lesion, as told by himself, before the New York Academy of Medicine, with wonderful power and thrilling interest. The history is probably without a parallel in the annals of surgery, but it is questionable whether the American public should be taxed to secure its gratuitous distribution.

In this article Dr. Thompson has committed a remarkable error. On page 45 he states that prior to Dr. Sims's operations for vesico-vaginal fistula "there was no record of a single successful case," thus showing that he is not familiar with the work of his own countrymen. In addition to other cases he has overlooked those of Hayward (*Amer. Journ. Med. Sciences*, August, 1839, p. 283, and *Boston Med. and Surg. Journ.*, April 16, 1851), Mettauer (*Amer. Journ. Med. Sciences*, July, 1847, p. 117), Pancoast (*Medical Examiner*, May, 1847), and Smith, of Philadelphia (*Ibid.*, 1849, p. 155). This omission appears more strange because Dr. Thompson quotes Sims's original paper (*Amer. Journ. Med. Sciences*, Jan. 1852, p. 59), in which that author gives due credit to his countrymen Hayward and Mettauer.

Our author next treats of Vaginal Rectocele (p. 57), claiming that the disease can be radically cured only by an operation. Dr. Thompson differs materially from Sims and Emmet in his mode of operating, since he removes the vaginal mucous membrane between the points which he wishes to attach. He places his patient in the ordinary lithotomy position, makes an incision through the mucous membrane of the vagina, and then dissects this up on either side by inserting a steel director beneath it. The redundant tissue is then removed and the cut edges brought together with sutures. The reviewer has no doubt whatever that this is a great improvement upon the plan pursued by Sims, by whose method he has never succeeded in obtaining union, though he has performed the operation a number of times, while by removing the whole of the redundant mucous membrane, —whether the case be one of rectocele or cystocele—and approximating the edges prompt union is almost certain to follow.

The cases of Rectocele are clearly related, but none of them possess any peculiar interest. Every gynæcologist in active practice meets with numbers of such, the records of which he does not think of sufficient interest to publish either in a medical journal or a volume of hospital reports.

The paper on Cystocele possesses no special interest, as it records no new facts and contains no new suggestions for treatment.

We now reach the section on the "Diseases and Displacements of the Uterus." (p. 70.) In the preliminary remarks upon "prolapsus uteri, complete and incomplete," there is not much to either praise or criticize. Speaking of the powers which maintain the uterus in position, no place has been given to what Dr. Matthews Duncan calls the "retentive power" of the abdomen. (*Researches in Obstetrics*, Edinburgh, 1868, p. 409.) Probably Dr. Thompson attaches no importance to this force, an inference justified by the fact that there is no recognition of the principle in the treatment of his cases. This we think is unfortunate, as attention to Dr. Duncan's suggestion facilitates the treatment of all uterine displacements.

Dr. Thompson makes some judicious remarks (pages 72-3) upon constipation as a cause of prolapsus uteri, and they might have been extended with propriety. He says that "the sigmoid flexure of the colon and upper part of the rectum become filled and gradually distended, forming a tumour which presses the uterus downward, backward, and to the right. Cathartic medicines (which are generally given in these cases) cause violent expulsive efforts on the part of the intestines, assisted by the diaphragm and abdominal muscles, tending to aggravate the uterine displacement by the increased pressure." He then goes on to speak of congestion of the uterus, but gives it no prominence. That prolapsus and other displacements may have this mechanical origin—that is, that the uterus may be pushed into an abnormal position by an overcharged bowel—we will not deny, but we think that the author would have done well had he attached more importance to congestion with consequent irritation, enlargement, and displacement of the uterus as a result of chronic constipation. That irregularity of the bowels should frequently be the starting-point of uterine disorders is easily explained. The connection between the vessels of the uterus, the hemorrhoidal veins, and the great portal circle furnishes a ready explanation of the association of the two conditions, which did not escape the notice of Simpson, who says (*Obstet. Memoirs*, Phila. 1856, vol. i. p. 53), that "the secretion of the liver and the menstrual flow seem to be almost vicarious of each other," and of Lane, who wrote a work upon this subject in 1848. Chronic constipation, by interfering mechanically with the circulation of the uterus, may induce congestion, then hypertrophy, and finally, it may be, inflammatory changes and displacements, either prolapsus, version, or flexion. We have in this a most important therapeutical principle which it is to be feared is not sufficiently recognized. The importance of keeping the bowels free to prevent certain uterine diseases, and to aid in their cure when they have set in, cannot be too strongly insisted upon.

Speaking of the treatment of prolapsus uteri, Dr. Thompson says (page 76): "Pessaries as a means of cure are worse than useless." It must be remembered that he is now speaking of the worst cases of the displacement, and as regards these the statement is in the main correct. But when the displacement is not so great, a pessary may be an important aid in effecting even a radical cure. In those cases in which the descent of the organ has followed congestion, its elevation by a properly adjusted pessary will often greatly aid in the treatment. The disposition of gynecologists is either to rely upon these agents exclusively, or to discard them altogether. Dr. Thompson seems to be one of the latter class, for we can find no mention of their use among the histories of his cases. Both courses are equally objectionable. The truth is here, as in many other cases, in the middle ground. We are not a strong advocate for the use of pessaries, being fully convinced that they often do more harm than good ;

but when employed to correct a malposition and thereby restore impeded circulation, and when used as an adjuvant to local treatment, they become important agents for the relief of some of the diseases peculiar to women.

Dr. Thompson's method of operating for the relief of procidentia of the uterus differs somewhat from that of Prof. Braun of Vienna, as described by himself (*Wiener Med. Wochenschrift*, Nos. 31 and 32, 1859) and by Dr. Munde (*Am. Journ. of Obstet.*, Nov. 1871, p. 385). Braun removes elliptical folds from either the anterior or posterior walls of the vagina, or from both, at the same time that he amputates the vaginal part of the cervix of the enlarged uterus. Dr. Thompson (page 77) "amputates the cervix and allows the parts to recover before reducing the procidentia." He says, "that this is safer, being less likely to be followed by acute inflammation of the body, or peritoneum, which sometimes follows the simple reduction without any other interference with the parts." In taking this course the author has laid himself open to serious criticism. He says nothing of the importance of preparing the tissues before operating, upon which Braun insists. These are usually hard and much altered by friction and prolonged exposure to the air. If the procidentia is kept reduced for a few days, the ordinary characters of mucous membrane are restored, the vaginal walls becoming soft and supple through relief to the obstructed circulation. Certainly it is best to operate upon tissues which are as healthy as they can possibly be made, and not upon those which are hard, horny, and irritated from friction, exposure, and abnormal position. The object of amputation of the cervix offers another reason for reducing the procidentia after the operation is performed. The juxtaposition of the cervix to the bladder in front and the rectum behind, with the fact that in many of these cases the vaginal wall is attached to the lowest portion of the uterine neck, precludes the possibility of relieving the hypertrophy by amputating any considerable portion of the cervix. Even by including a part of the anterior vaginal wall, but a small part of the diseased tissues can be removed. Hence the surgeon has to rely upon other agencies which he calls into play by his operation. The improvement in the condition of the uterus is chiefly due to the inflammation which is induced, which in some way stimulates the absorbents, leads to removal of the diseased tissues, and consequent diminution in the size of the offending organ. This being the case, the plan of Dr. Thompson is open to serious objection, since by leaving the procidentia unreduced he fails to obtain an aid of which he might avail himself by removing the impediment to the circulation by restoring the uterus to its natural position after amputation of the cervix. The principle is very important in the management of uterine displacements, either originating in inflammation or producing it consecutively. We have ourselves followed Braun, and after removing a portion of the hypertrophied cervix replaced the prolapsed uterus and maintained it as nearly as possible in the natural position by tamponing the vagina with pledgets of cotton soaked in glycerine.

Dr. Thompson's objection that this course is more likely to result in inflammation both of the uterus and peritoneum is hardly valid. We are perfectly aware that the simple reduction of a long standing procidentia may be followed by serious symptoms and even by pelvic peritonitis; but this does not invalidate the position which we have taken. Certainly removing the congestion of the uterus by restoring its position will tend to prevent, not produce, inflammation, while the danger of this supervening after the operation, and producing adhesions with the uterus still out-

side of the body, is too serious to be assumed lightly, since it is a demonstrated fact, that any inflammation of the cervix, body, or lining membrane of the uterus, whether it occurs spontaneously or is induced by an operation, is likely to be followed by pelvic peritonitis and its consequences.

The reports of a number of cases of prolapsus and procidentia are given. It would have been better if these had been more full. It is interesting to know how rapidly absorption and consequent diminution in the length of the cavity of the uterus go on after amputation of the cervix, but Dr. Thompson's records do not furnish the data by which this can be ascertained. His fifth case of prolapsus (page 82) is very interesting on account of the remedies employed. "Subcutaneous" injections of strychnia thrown *into the vaginal walls* are stated to have "acted like a charm;" the absorbents of the uterus being stimulated to increased activity, so that at the expiration of seventeen weeks the patient was "perfectly cured without any surgical application." This application of strychnia, so far as we know, is original, and from the result obtained appears to be worthy of a trial in similar cases.

Uterine tumours are discussed on page 91, and one of the cases (page 96) teaches a very important lesson. Pelvic peritonitis and metritis resulting in death followed the use of a sponge tent, employed to examine a myo-fibroma of the uterus. Again, on page 102 is the history of a case in which tetanus supervened after the use of this same agent. These facts very justly lead the author to assert that sponge tents "are by no means the simple agents they are generally supposed to be. Like other potent remedies, they should be used with great care and circumspection." While we most cordially agree with this caution, having learned from bitter experience the accidents that sometimes follow their use, we cannot support the author in the measures by which he proposes to prevent them. He writes (page 104) that he has been induced "in all cases where the employment of a sea-tangle or sponge tent is indicated, first, to divide the fibres around the internal os," since which, he says, he has seen no trouble following their use. We are not told how long this plan has been pursued, nor in how many cases it has been adopted, but we cannot help regarding it as a most reprehensible procedure. Gynæcologists whose experience has made them aware of these dangers, seek to avoid them not by still more irritating methods, but by properly preparing their patients before the introduction of the tent and sedulously watching them afterwards. We have never tried Dr. Thompson's plan, and after having seen pelvic peritonitis follow the introduction of the uterine sound—apparently having the relation of cause and effect—shall not feel inclined to do so until the author has more carefully recorded his facts.

Subinvolution of the uterus is next considered, and then follows a long paper upon cancer of the uterus and mamma. This is largely made up of quotations from the writings of various authors from Hippocrates to Woodward. Desiring to deal chiefly with the author's own views, there is but little to examine. Dr. Thompson attempts to revive the old doctrine that cancer of the uterus has its origin in previous inflammation of the organ, a view to which Dr. Noeggerath has also recently attempted to give some prominence. (*Am. Journ. of Obstetrics*, vol. ii. pp. 505, 610.) We cannot see that our author has proved his position, which is at variance with the opinion of most authoritative gynæcologists. This question is important since it leads our author, who seems to have no dread of heroic measures, to suggest operative interference for the

prevention of cancer of the uterus. On page 154 he says: "If chronic inflammation of the cervix in some constitutions results in carcinoma, will it not be good practice to amputate the cervix whenever the disease is found intractable to ordinary remedial measures? Why not give the patient the security which this operation affords?" It is further stated that the procedure is devoid of any special danger, and that "quite a large majority of these cases of chronic cervical metritis are incurable by any other means." Both of these propositions are to be combated. That a large majority of cases of inflammation of the uterus are incurable by much milder remedies than amputation of the cervix, we cannot forbear denying. We dread this much less than many other disorders of females, and cannot but suspect that Dr. Thompson has erred in diagnosis, or that he has not continued his treatment long enough to effect the desired result. No matter how long simple inflammatory disease has existed, nor how severe it may be, we always have a hope of curing it, if it has not resulted in serious flexions, and indeed we have often been surprised at the rapidity with which an indurated and enlarged cervix would soften and diminish in size when we had perfect control of our patients, as the author has of his, in hospital wards. Moreover, no operation upon the uterus is entirely devoid of danger, and even though a woman may suffer greatly—though you may think she is in danger, at some remote period, of being attacked by a disease which will inevitably destroy her life, it is a very serious matter to insist upon performing an operation which may produce death in a very short time. It is also to be remembered that in chronic inflammation, as in hypertrophic enlargement of its supravaginal portion, and in procidentia of the uterus, amputation of the cervix probably does good through the nutritive changes which it induces, and not because a considerable portion of the diseased tissues can be removed. If, as seems probable, inflammation is the agent which effects these alterations, is it not fair to conclude that the induction of this in some less bold manner will be just as beneficial? We think we have found it so, and cannot but believe that the cases of uncomplicated chronic uterine inflammation, in which such heroic interference is demanded, must be very rare.

In relation to the treatment of cancer when the disease is "confined to the vaginal portion of the cervix, and the contiguous tissues are not implicated," removing as much tissue as possible, "without endangering the peritoneal cavity," is recommended (p. 153). We wish that the author had told us how often he had met with cancer in this incipient stage. For our own part we confess—after considerable observation, in which a good deal of attention has been given to this subject—that, with the exception of cauliflower excrescence, we are utterly unable to diagnose non-ulcerated cancer, until the contiguous tissues are implicated. It is greatly to be regretted that the powers of some persons are so limited, but we hesitate less in making this acknowledgment when we remember Dr. J. Henry Bennett's criticism of Ashwell's cases (*Practical Treatise on Inflammation of the Uterus, etc.*, Phila., 1864, p. 423); the discussion of Dr. Wynn Williams's cures of this disease by injecting solutions of bromine into the substance of the uterus (*Trans. Obstet. Soc. of London*, 1871, vol. xii. p. 249); and the distinct statement of Prof. T. Gaillard Thomas, of New York, that he has seen but one case of non-ulcerated cancer, and "in that the diagnosis was made by the peculiar hard nodular feel of the cervix, and by the coincident implication of the vagina. Without vaginal implication," he says (*Practical Treatise on the Diseases of Women*, 2d ed., Phila., 1869, p.

444), "I should have hesitated in arriving at a positive diagnosis, and I feel sure that he who ventures upon a decision as to the nature of the disease at this period must expose himself to great risk of error." Authorities might be multiplied, but it is unnecessary. If Dr. Thompson is in possession of any information which enables him to diagnosticate this disease at this early period, it is due the profession and suffering women that it should be made known at once. If he has not, we cannot but conclude that he has mistaken chronic inflammatory enlargement for carcinoma.

Our author removes the cervix, with a pair of strong blunt-pointed scissors, having previously seized it by a strong volsella, and made "sufficient traction to bring it fairly within reach." (p. 153.) He claims that the *écraseur* is dangerous, as too much tissue may be dragged within its grasp. He does not seem to be familiar with the instrument devised by Dr. J. Braxton Hicks, for operations on this part (*Guy's Hospital Reports*, vol. vii., 3d series, p. 252). The objections to the chain *écraseur* do not apply to this, for its flexible wire can be applied anywhere in the cavity of the vagina, so that the operator is enabled to remove the diseased mass with the uterus *in situ*. This it seems to us is an important consideration, for, as Dr. Hicks pointed out in 1866 (*Guy's Hospital Reports*, 3d series, vol. xii. p. 370), adhesions between the body of the uterus and adjoining organs may be broken, and since pelvic peritonitis is an ordinary complication of uterine cancer, it is best to entirely avoid this danger, as well as the shock which sometimes follows dragging the uterus down.

The objection made by Dr. Thompson, that the peritoneal cavity may be opened, has but little force, if the operation is properly performed. The wire should be applied at the attachment of the vagina and cervix, and the instrument kept well up while the screw is tightened. If this be done, there is no danger of opening the peritoneal cavity, while the objection which the author makes to the chain instrument is an advantage in this one, for it will drag in the largest quantity of tissue that can be safely removed, while it effectually prevents either primary or secondary hemorrhage; to the latter of which the woman is liable for several days, if the cervix is amputated with the scissors.

Nothing is said of the treatment of uterine cancer by scraping away the diseased tissue; a plan which has recently been recommended by Prof. Simon of Heidelberg, and described by Dr. Munde of New York. (*Am. Journ. Obstet.*, Aug. 1872, p. 309.)

Then follow papers upon "diseases of the vagina and cervix uteri," and "chronic cervical metritis and endometritis." The former is chiefly remarkable for illustrating Dr. Thompson's singular disposition to make long quotations. Tyler Smith is laid under obligation most extensively in this chapter. The second, on chronic cervical metritis and endometritis, is of inferior merit. The cases are of ordinary interest, and the remarks upon the disease contain nothing not well known to the profession. The description of the disease is vague and imperfect, and the rules for treatment are not what we should expect from a hospital physician and a clinical teacher in the College of Obstetrics and Gynecology, Washington, D. C.

On page 199, a case of chronic cervicitis is related. The cervix was two and a half inches long. This is evidently the hypertrophic *élongement* of the cervix described by Huguier and others, and should have been included in another category. The cervix was very properly amputated, but the same cannot be said for the operation in the next case (p. 200); a patient who was admitted on May 9th, with the "cervix hypertrophied and

the portions around the os of stony hardness." Consistent with his theory, that this was "a case to invite malignant disease," the cervix was removed on May 11th. These are all the indications that are mentioned for this operation. Certainly such cases should be fully and succinctly related, and the profession furnished with details which will enable them to determine what degree of hypertrophy warrants this form of surgical interference. As this history is related, we cannot but believe that most physicians would have relieved the patient, not sooner probably, but by less heroic means.

We are next favoured with the history of a patient from whose bladder an iron crochet needle was removed. The case is interesting, and resembles one reported by Dr. T. G. Morton (*Pennsylvania Hospital Reports*, 1869, vol. ii. p. 46), and which, with all his fondness for quotations, Dr. Thompson does not notice, though he favours us with no less than thirteen consecutive pages from Morgagni.

What possible reason there is to include an account of an operation for extirpation of the parotid gland in the report of a hospital for parturient women, and for diseases peculiar to their sex, we cannot tell. Nevertheless such a case is related, as well as the history of the "successful removal of an hypertrophied third lobe of a thyroid gland."

The history of a case of impacted feces mistaken for an ovarian tumor, a paper on pelvic cellulitis, and some remarks upon diseases of the rectum, close Dr. Thompson's portion of the Columbia Hospital Report.

These papers of Dr. Thompson are illustrated, and we cannot pass over this part of the work without saying something about the figures. They in no way add to the attractiveness of the report, and certainly will not increase the reputation of Washington artists. Dr. Thompson has not only copied many of his illustrations, but in some cases has failed to give credit to their authors. Figure 2 of Plate I. bears a striking resemblance to one of Mr. Baker Brown's plates, but Dr. T. has more than copied the faults of his predecessor. The genital organs of Washington females must be most peculiarly constructed if their vaginal walls are as angular as represented in the wood-cut. After Parvin's criticism (*Am. Practitioner*, 1873) of Baker Brown and his copyists, we had hoped that no American writer would be guilty of committing similar errors, but here is one which has far outstripped the blunders of his predecessors.

In the chapter on "Diseases of the Vagina and Cervix Uteri," the illustrations, like a large portion of the text, are from Tyler Smith's work on Leucorrhœa, but the former are inserted in such a way as to mislead the reader into the impression that they are original. However, there is good reason to conclude that any author, whose plates are thus appropriated, will not complain that they are unacknowledged, for Plate VII., page 77, is said to be from Savage. If this report meets the eye of the author of the magnificent work *On the Surgery of the Female Pelvic Organs*, he will certainly fail to recognize his own production, so marvellously has it changed under the copyist's hand. In view of this fact we shall say nothing of certain other remarkable pictorial productions to be met with in the work.

We now come to the consideration of the second portion of the volume, the Appendix, the first part of which is a report on the Department for Diseases of Females at the Columbia Hospital Dispensary. This is written by Dr. F. A. Ashford, and is by far the most interesting and important part of the work. The author is evidently a most painstaking and careful

writer, and his report has a freshness about it, because it is, in the main, composed of his own observations. These, it is true, may not be original, but the analysis of any series of carefully observed cases is important, especially when the author, as in this instance, uses his experience to reiterate important rules of treatment.

The report of Dr. Ashford opens with a tabulated statement of 1612 cases, which have been treated at this dispensary. Comparison of this table with one recently published by Hewitt of London (*Diseases of Women*, Philadelphia, 1873), furnishes some striking results. Out of 1205 cases analyzed by the latter writer, no less than 296 were versions and flexions, of which there were 184 cases of anterior and 112 of posterior displacement. Dr. Ashford, however, met with only 50 cases of version and flexion, of which 20 were anterior and 30 were posterior. This discrepancy is very striking, and is difficult to account for, since a reference to the text of Dr. Ashford's paper shows that he is fully aware of the importance of these displacements. Dr. Hewitt has, we think, overestimated their frequency and importance, while Dr. Ashford probably does not give them a sufficiently prominent place.

We next have a report on metritis. Two very interesting cases of acute inflammation of the uterus are related. Both resulted from direct injury to the organ from attempts to produce abortion, though neither patient was pregnant. In both instances the injuries were self-inflicted. In the first, abscess of the uterine wall occurred, and was opened with a bistoury, the only example of this very rare lesion which Dr. Ashford has met with in 2500 cases of diseases peculiar to women. The second patient passed a sharpened piece of whalebone into the vagina, and thrust it through the anterior lip of the cervix just at its vaginal attachment. It passed upward and backward into the cavity of the uterus. The remarks which follow upon the treatment of this disease, the great necessity for care to prevent chronic inflammatory disease, and on the rarity of acute metritis are judicious and will well repay perusal.

Dr. Ashford's analysis of the cases of chronic metritis which have come under his care is of great interest. He very properly insists upon the need of care in examining the patient, and from his practical experience reasserts the value of the bimanual method of examining the uterus. This may hardly seem necessary to some, but when it is remembered that resort to it is frequently neglected, the plain forcible way in which the author states the results of his experience will not be without good results.

The most important part of his paper on this disease relates to treatment. Dr. Ashford is a convert to the utility of sponge tents and intra-uterine injections, but he employs them with so much care that he does not seem to have been annoyed by unpleasant consequences. He alludes to one case in which uterine colic followed a simple vaginal injection, in administering which he says, the nozzle of the syringe was inserted into the mouth of the uterus. This is not always necessary to produce these unpleasant symptoms. We have twice seen it follow the use of simple vaginal injections for leucorrhœa, in which there was not the slightest reason to believe that the nozzle of the syringe had been inserted into the os uteri. In both cases the injection was used a day or two after the cessation of the menses. In one instance the symptoms were so serious as to threaten life. Dr. Ashford fully recognizes the dangers of intra-uterine injections unless the os is fully dilated, and free egress is allowed the injected fluid. He sometimes employs Nott's canula (*Amer. Journ. of Obstetrics*, vol. ii.

p. 491), an instrument which possesses many advantages. We can bear testimony to its usefulness, having repeatedly employed it within the last few years without any untoward accident. The author's remarks upon this subject, though containing nothing absolutely new, are judicious, to the point, and well worthy of study.

Following Dr. Ashford's report is one from Dr. Samuel C. Busey upon the Department for Diseases of Children. The first paper, an interesting one, is upon intermittent fever. This is a subject of more importance than many seem willing to admit. There is no doubt that the disease may assume very peculiar forms, and be singularly masked in young children. We would have been glad if Dr. Busey had given us a full and succinct analysis of the symptoms in his cases at the Columbia Hospital. He does not refer to Dr. C. Hanfield Jones's interesting remarks upon what he calls "Malaroid Disease" in young children (*Studies on Functional Nervous Disorders*, London, 1870, p. 765), which some may think an overdrawn picture. This, however, is not true. Considerable experience has convinced us that, as in adults, the malarial poison may produce the most singular effects in children, and that in them it is particularly liable to be attended with severe nervous symptoms. Drs. Jones and Busey both speak of delirium and convulsions. Moreover the periodicity of the disease is not so perfectly developed as in adults. At the same time the affection may be immediately dangerous, and if not met promptly by proper treatment may quickly terminate in death, the child apparently perishing from grave cerebral disease; suddenly becoming pale, cold, and blue, but without a rigor it soon flushes and becomes stupid, with or without convulsions. The stupor is sometimes so profound that it is impossible to rouse the little patient. That this condition should be mistaken for an acute cerebral disease of such a character as to warrant the most grave prognosis is not surprising. But a few hours are sufficient to produce a surprising change. Perspiration occurs after a little time, and with it the stupor diminishes, so that towards morning the intelligence may be quite restored. Later in the day the paroxysm recurs, unless anti-periodics are administered in the intervals. It is easy to see that a condition such as that described may quickly prove fatal if not promptly treated.

Quinia is the specific, but here we must protest against the doses which Dr. Busey recommends. We are perfectly familiar with the fact that Binz and Jacobi have demonstrated, or rather reasserted Briquet's statement, that infants will bear large doses of this remedy. Practical experience has taught us the same thing, but it has not proved that these quantities of the drug are necessary or useful in intermittent fever. We can fully confirm the assertion of the able reviewer of this Report in the *Philadelphia Medical Times* (July 19, 1873, p. 669), who says that in the treatment of the malarial diseases of children it is not necessary to give a larger proportional dose than that prescribed for an adult. In the management of this disease in adults we have always tried to avoid giving more quinia than is really necessary to arrest it. We do not hesitate to say that two or four grains of the drug given between the paroxysms will as certainly arrest the disease in a child two or three years old as twenty grains will in an adult. That disproportional quantities will sometimes cinchonize them to their serious detriment, we think we have seen fully demonstrated.

The next article is entitled "Enterocolitis, Cholera infantum, Dysentery, and Dentitio difficilis." The author says (p. 321) that "to avoid confusion

and repetition" he has "associated these four allied disorders," between which, he adds, "all admit that clinically it is impossible to determine with accuracy the pathognomonic differences." And again he asks (p. 332), "Is not the distinction one of degree rather than of kind?" We might express our surprise at this question. The association of difficult dentition with the three intestinal diseases is peculiar, and no doubt arises from the fact that children are very liable to these affections of the bowels during the period when the teeth are making their appearance. But Dr. Busey himself very justly doubts whether the fourth is entitled to the distinction of being a distinct disease. We believe that it is not. Dentition is a purely physiological process, and is much less frequently attended with serious symptoms than is generally believed. We know that all of these disorders of the bowels, as well as many others, are frequently attributed to difficulty in cutting teeth, but we are satisfied that the assurance which many physicians give anxious mothers, that the symptoms which have alarmed them are due to teething, is but a cloak for their own ignorance. It is quite time for this bugbear of the nursery to be put among the things of the past, and for physicians to learn that the diseases of their little patients can only be understood by patient investigation. The more careful the examination the less frequently will the medical attendant find himself attributing diarrhœa, vomiting, convulsions, or paralysis to the influence of dentition, and the more frequently will he find other means to account for the conditions observed.

But is the distinction between entero-colitis, dysentery, and cholera infantum "one of degree rather than of kind?" We hardly know how to reply to such a question, but would ask in return whether the author considers diarrhœa, dysentery, and cholera morbus, or Asiatic cholera of adults a disease differing in "degree rather than in kind?" If he does, we might inquire whether he regards bronchitis, pneumonia, and phthisis to differ "in degree rather than in kind?"

The directions of Dr. Busey for the treatment of this disease are, in the main, judicious.

Following this is an interesting paper on "the value of certain drugs in the treatment of bronchitis," but we have not the space to analyze this, while we will not attempt to criticize the report of the Department for Diseases of the Eye and Ear, by Dr. D. W. Prentiss, which ends the volume.

In closing this review we must express our regret that the volume does not contain more matter worthy of praise; but with its long quotations and unacknowledged illustrations, it is probably the most notable example of book-making which has issued from the American press for a long time. It certainly will neither add to the reputation which the reports from the Surgeon-General's Office have achieved for the medical publications of the Government, nor give fame to the "College of Obstetrics and Gynæcology, Washington, D. C.," whose faculty is, for the most part, composed of the authors of this report, and whose advertisement has been circulated with it. The volume contains no information sufficient to make it desirable that the publication should be continued, even if we thought the support of such a hospital and the publication of its annual report by the Government justifiable under any circumstances.

J. S. P.

ART. XII.—*Contributions to Practical Surgery.* By GEORGE W. NORRIS, M.D., late Surgeon to the Pennsylvania Hospital, Vice-President of the College of Physicians of Philadelphia, Member of the Société Médicale d'Observation of Paris, etc. 8vo. pp. 318. Philadelphia: Lindsay & Blakiston, 1873.

ALTHOUGH for more than thirty years the name of NORRIS has been a household word with American surgeons, and indeed with surgeons in all parts of the civilized world in which the English language is either read or spoken, this is, we believe, the first occasion on which the distinguished author of the volume, the title of which is given above, has come before the public as the writer of a book. It must, we are sure, prove a source of great and sincere gratification to all lovers of the noble art which he has done so much to adorn, that Dr. Norris has at last brought together and placed in a permanent form the more important of those "contributions to practical surgery," which have made his name so familiar to all students of surgical science, and which, as they successively appeared (mainly in the pages of this Journal), tended to diffuse such uniformly sound and correct views upon the various important subjects of which they treated.

In his brief and modest preface, Dr. Norris tells us that several of the essays contained in his volume

"have met with favourable notice abroad as well as at home, and have been freely made use of by later writers, in some instances with but slight notice of their sources. The statistical method of investigation at the time of their publication was something of a novelty in surgery, and was looked upon with suspicion, but it is now everywhere accepted as one of value in all departments of research."

We may add that, were all statistical investigations conducted with as much care and candor as those of the author, the numerical method would, probably, now be still more favourably regarded than it is.

The essays contained in the present volume are (1) On the occurrence of non-union after fractures;¹ (2) On the treatment of deformities following unsuccessfully treated fractures;² (3) Statistics of fractures and dislocations treated in the Pennsylvania Hospital during the twenty years from 1830 to 1850;³ (4) On compound fractures; (5) Statistical account of the cases of amputation performed at the Pennsylvania Hospital from January 1, 1850, to January 1, 1860, with a general summary of the mortality following this operation in that institution for thirty years;⁴ (6) Statistics of the mortality following the ligature of arteries, viz., the subclavian,⁵ the iliac,⁶ the carotid and innominate,⁷ and the femoral;⁸ and (7) an instructive case of varicose aneurism at the bend of the arm.⁹ The paper on compound fractures is now published for the first time, while the essays on the occurrence of non-union after fractures and on the treatment of deformities after fractures have received very considerable additions, the new

¹ See No. of this Journal for Jan. 1842, p. 13.

² Ibid., Oct. 1842, p. 305.

³ Ibid., April, 1841, p. 324, and Oct. 1852, p. 301.

⁴ Pennsylvania Hospital Reports, vol. i. p. 149.

⁵ No. of this Journal for July, 1845, p. 13.

⁶ Ibid., Jan. 1847, p. 13.

⁷ Ibid., July, 1847, p. 13.

⁸ Ibid., Oct. 1849, p. 313.

⁹ Ibid., Jan. 1843, p. 27.

material in each constituting indeed rather more than one-fifth of the whole. The third paper, on the statistics of fractures and dislocations, has also been improved by the introduction of various illustrative cases, some hitherto unpublished and some extracted from other contributions of the author to this Journal.¹ The subjects which have been especially elaborated in the additions to this paper are fracture of the neck of the thigh-bone, dislocation of the astragalus, and dislocation of the shoulder complicated with fracture of the neck of the humerus. The statistics of amputation and of the ligature of arteries are pretty much reprints from the papers in which they first appeared, in the Pennsylvania Hospital Reports and in this Journal.

There is no occasion at this late date to offer any critical review of Dr. Norris's writings. They have long since become classical, and we think too highly of American surgeons not to believe that all are acquainted with these admirable contributions to surgical literature. We shall therefore do no more than call attention to some of the additions to the essays on ununited fracture and deformity resulting from fracture, and shall then briefly examine the newly published essay on compound fractures—an essay which, combining as it does the fruits of wide reading with the slowly acquired wisdom derived from practical experience, may well serve as a model of its kind.

The essay on the *Occurrence of Non-union after Fractures*, as originally published, has been justly characterized by Prof. Hamilton, of New York, as “the most complete and reliable monograph upon this subject contained in any language,” and, with the valuable and extended additions now made to it by the author, is, we hardly need say, even more exhaustive and trustworthy than in its original shape. To some of these additions we will now refer:—

On page 10, is added a paragraph which draws more clearly than was done before the distinction between the existence of *delayed union* and the occurrence of true *ununited* or *disunited* fracture. On page 14, the account of Duhamel's and of Haller's experiments is supplemented by a statement of the views of Bordenave and of Macdonald; and on pages 19 *et seq.*, suitable reference is made to the modern teachings of Virchow, Foerster, Rindfleisch, Billroth, and Gurlt, essentially confirming the doctrines of Dupuytren, as well as to the opposing views which have of late years been promulgated by Paget and Hamilton. In the pages devoted to the consideration of the *causes* of ununited fracture, additional illustrations are given of the influence in this respect of cancer, of general impoverishment of the system from starvation or deprivation of an accustomed stimulus, of paralysis, of undue motion of the part, etc. Many additional examples are also given of the existence of ununited fracture in persons who were yet able to make great use of their injured limbs, but, as might be expected, the most important interpolations are in that portion of the essay which is devoted to the subject of the *treatment* of false joint.

Under the heading of *friction*, the credit of having been the first to employ an external support while allowing the patient to use the limb, so as by the “stimulus of exercise” to lead to the formation of callus, is given to White, of Manchester, who thus successfully treated an ununited fracture of the thigh in 1768. Similar contrivances have been since resorted to by Inglis, by Troschel, by Prof. Smith, of this city, and by other surgeons.

¹ Ibid., Aug. 1837, p. 378, and Jan. 1843, p. 13.

The first suggestion of the *seton* as a means of treating ununited fracture has been, as is well known, often attributed to Winslow; but Dr. Norris has been able, by referring to the original memoir written by that surgeon, to determine that it was in a case of necrosis and not of false joint, that he used the seton, and that the credit of having been the first to employ it in the management of pseudarthrosis is rightly due to our own Physick.

Full and fair accounts are given of the methods of treatment introduced by Dieffenbach, Brainard, Miller, Jordan, Ollier, and Bigelow, and indeed everything of real importance in the recent literature of his subject has received Dr. Norris's careful attention.

The most important additions to the essay on the *Treatment of Deformities following Fractures* consist of further illustrations of the practice of rupturing the callus, and accounts of the operative measures which have been employed by Josse, of Amiens, Rynd, of Dublin, Brainard, of Chicago, and various other surgeons.

In the essay on *Compound Fractures*, Dr. Norris points out the much more serious character of those cases in which the wound is produced by external violence, than of those in which the laceration of the soft parts is due to the protrusion of the broken bone :—

“In the first of these classes the wound is generally large and accompanied with great laceration, the bone being often comminuted, and the case altogether one of the most serious kind; but in the second class the external injury is mostly of small extent, and no other parts are injured than those with which the bone comes in contact—union of the wound by the first intention frequently follows, and, even if this desirable event is not obtained, it is soon covered by granulations which speedily cicatrize.”

The influence on the progress of the case of the age, habits, and constitution of the patient, and of the season of the year at which the accident occurs, are duly considered, and the increased risk when the seat of fracture is near a large joint clearly pointed out :—

“In making a prognosis, too, it is of importance to consider the limb affected and as a general rule it may be stated that the nearer the fracture be to the trunk, the greater the risk incurred by the patient. In the country, or in private practice, the chances of saving a limb in these accidents is always greater than in large cities or in hospitals. In civil hospital practice, compound fractures of the arm and forearm generally do well; in the leg, under the same circumstances, where an attempt is judged proper to save the limb, the accident is more serious, and a number must either suffer secondary amputation or die, and in the femur the majority of adults will not survive them.”

Dr. Norris believes that with the exception of such as are produced by railway and machinery accidents, the compound fractures met with in civil life are less dangerous than those which are due to gunshot injury, and quotes with approval the saying of Dupuytren, viz., “on one point my opinion is unchangeable. In rejecting amputation in them [gunshot fractures] more lives are lost than limbs saved.” In considering what cases of compound fracture demand immediate amputation, Dr. Norris justly insists upon the importance of regarding the age, habits, and constitution of the patient, as well as the degree of care and attention which he can command during the course of treatment. Thus amputation might be properly performed in the case of an old, feeble, or intemperate person, or of one who was to be treated in a crowded hospital or to be transported a considerable distance from the place at which the injury was received, when the same operation would be quite unnecessary in the case of a young

and healthy subject, or of one who lived in the country or who could be nursed in a pure and uncontaminated atmosphere. The *local* conditions which indicate amputation are stated by Dr. Norris as follows :—

“1st. Where the bone is comminuted, and the soft parts so much contused, lacerated, or destroyed as to make it evident that gangrene must follow.

“2d. Where the bone is fractured and a portion of the limb torn off by machinery, the bursting of a gun, a cannon shot, or the passage over the part of a railroad car.

“3d. Where the laceration of the soft parts around the fracture is very extensive or extending into a large joint, even though the bone be not comminuted.

“4th. Where the fracture, though accompanied with but little laceration, extends through the head of a bone into a large joint, as the knee or shoulder. [This rule is subsequently qualified by the statement that in suitable cases, at least in the shoulder, elbow, and hip, excision should be preferred to amputation.]

“5th. Where the bone is fractured in more than one point and accompanied with great laceration and confusion of the surrounding parts, or in cases where the bone is extensively exposed with the soft part separated from it, especially if the fracture be in the neighbourhood of an important articulation, and has been produced by the application of direct force.

“6th. In cases where the injury is not so extensive as in the instances mentioned, but is accompanied with the division of the principal artery and nerves, for though neither the division of the vessel, the laceration, nor the fracture may alone justify the removal of the limb, yet the whole together will frequently make it necessary.”

Dr. Norris is in no degree an advocate of indiscriminate amputation, and justly remarks that the risk of the operation itself should be duly considered in every case—

“Since it by no means follows, as many seem to think, where these accidents terminate fatally in our attempts to save them, that life would have been preserved had the operation been done, . . . another cogent reason for giving to the patient the benefit of even the slightest rational doubt in determining upon the question of amputation.”

These remarks of course apply rather to civil than to military practice; for in the latter, unfortunately, the exigencies of war often render it imperative to make amputation the rule, and an attempt at conservation the exception.

When it is determined in a case of compound fracture, to make an attempt to save the limb, the surgeon's first care should be given to the arrest of *hemorrhage*. If this be arterial, a tourniquet may be applied, but only temporarily, and every bleeding vessel should be carefully secured, both ends being tied if the vessel be of large size. Venous hemorrhage may be controlled by rest and position, aided if necessary by the application of cold and moderate compression. *Foreign bodies*, including particles of dirt, shreds of clothing, and fragments of bone which are entirely detached, are next to be searched for with the finger and carefully removed, and the fracture should then be at once *reduced*, not however by the sudden application of force alone, but by moderate and gradual extension, aided if necessary by enlarging the wound or removing the protruding end of the broken bone. The latter measure, though very seldom called for, is regarded by Dr. Norris as a legitimate resource in cases in which the fracture is otherwise irreducible. Recurrence of displacement is to be prevented by placing the limb in a proper position and by giving support “without the aid of tight bandages or great pressure.”

As regards *position*, Dr. Norris expresses a decided preference, in the case of the lower extremity, for the plan of extending the limb,

"inasmuch as it is easier for the patient, as well as his attendants, and permits of less disturbance of the fragments, while its results are fully equal to any that can be attained by the position of Pott, or the semi-flexion of the knee with the patient on his back."

In the case of the upper extremity, Dr. Norris directs that the part should be fixed on suitable splints, and the patient kept in bed with the limb supported on a pillow till after the subsidence of fever, when he may be allowed to move about with the part sustained by a sling.

"The important requisites for treating fractures successfully are coaptation and immobility, and in my judgment it matters little what particular apparatus is employed, provided it be made to fulfil these indications, and keep the limb quiet and firm, and admit of the dressings being removed and reapplied without giving pain to the patient, or moving the fragments. The simpler the appliances the better."

When the laceration in the soft parts has been made by the protrusion of the bone, an attempt may be made to convert the case into one of simple fracture, by bringing the edges of the wound together with strips of adhesive plaster, and afterwards applying a many-tailed bandage, or by adopting the old plan of imbuing a piece of lint in blood and allowing it to dry over the injured part. The lightest dressings only should be employed in warm weather, and in winter soft poultices or lint wet with tepid water. Dr. Norris's experience has not led him to look upon well-made poultices with the aversion professed towards them by many modern writers. In case of profuse suppuration, or of troublesome venous or capillary hemorrhage, the bran dressing is recommended; it is particularly useful in summer by hindering the deposit of the ova of flies, and by preventing in a great degree the odor that would otherwise arise from the wound. It may be supplemented by the addition of an ice-bag laid over the surface. Irrigation is sometimes of service in hot weather, in the early stages of compound fractures which are attended with great laceration and contusion of the soft parts, but its indiscriminate use is condemned by Dr. Norris, who believes that its employment favours attacks of inflammation of the respiratory organs.

We observe with satisfaction that Dr. Norris still stands firm, and has in no degree yielded to the prevailing epidemic fondness for the starched bandage and other forms of the "immovable apparatus:"—

"That this treatment," he says, "in compound fractures has been in very numerous cases followed with good effects by its introducer and his pupils, as well as by its more recent advocates, cannot be doubted, but the frequent occurrence of severe inflammation, abscesses, gangrene, and want of union, and where cures occur, the deformities seen in the hospital services in which it has been used, leads me here, as in simple fractures, to condemn its general employment. Its chief value is, I think, to be found in its adaptation to military surgery. In civil practice, it is particularly objectionable when placed upon the limb immediately after the occurrence of the accident."

During the early stages of a compound fracture, the dressings should be examined twice, and renewed once daily—and this as well as changing the bedclothes and body linen should invariably be done under the surgeon's personal supervision, and not entrusted to nurses or other unskilled attendants. In fractures of the lower extremity, the weight of the bedclothes should be kept from the foot by the use of a rack or cradle, and, when the leg is the affected part, the patient's comfort may often be pro-

moted by suspending the limb in a fracture-box or by means of a suitable splint.

The various *complications* of compound fracture are succinctly considered by Dr. Norris, the most important being rupture of a large vein, nerve, or artery, previous disease of the bone, and concomitant luxation. Bleeding from a ruptured *vein* can usually be controlled by cold and pressure, with elevation of the injured limb; laceration of *nerves*, when amputation is not required, calls for the application of warm fomentations or poultices, with the free use of opium; rupture of a large *artery* is a most serious complication, and will often necessitate removal of the limb, though if other circumstances are favourable an attempt may be made to save the part by tying both ends of the bleeding vessel, or if the source of hemorrhage cannot be found by securing the main trunk at a higher point. Amputation is usually necessary when a compound fracture occurs in a previously *carious* or *necrosed* bone. When *dislocation* occurs as a complication of compound fracture, every effort should be made to effect reduction before permanently putting up the broken bone.

Various secondary complications may arise during the treatment of a compound fracture. If the patient be attacked with *delirium tremens*, the wound should be closed with adhesive strips and compresses of soft lint or charpie, and then the whole limb enveloped in a large and well-stuffed pillow held in place with a roller bandage. *Retention of urine* is to be guarded against by the use of the catheter; *erysipelas* to be met with suitable constitutional treatment and mild local applications; and early and free counter openings to be made to evacuate *collections of matter* in the neighbourhood of the wound. The presence of *maggots* is to be avoided by attention to cleanliness and by careful dressing; when present they may be got rid of by washing the part with cold water or weak vinegar and water, or by dressing the wound with preparations of carbolic acid, or tar or creasote ointment. *Excoriations and bed-sores* may usually be prevented by careful dressing, by bathing the parts with whiskey or soap-liniment, and by relieving pressure by means of water-beds, air-cushions, soft pillows, etc., and by the application of kid spread with soap cerate. When bed-sores actually occur, they must be treated as sloughing sores met with under other circumstances. Other secondary complications of compound fractures are *tetanus* and *pyæmia*, of the latter of which affections Dr. Norris has given a very interesting account under the heading of *secondary inflammation and deposits of pus in distant parts*. Here is reproduced, with alterations and additions, the author's excellent chapter on the subject from his edition of Sir Wm. Fergusson's "System of Practical Surgery," a chapter which, apart from its intrinsic merits, possesses much historical interest, as having been one of the first to call the attention of American surgeons to the frequent occurrence and fatal character of this disease.

Not long since we noticed a communication to a foreign journal, deprecating the use of anodynes in surgical cases, and gravely maintaining that a sleepless night would do a patient less harm than a dose of opium; we are glad to observe that Dr. Norris gives no countenance to this, which we cannot hesitate to characterize as a most atrocious doctrine.

"Great benefit," he declares, "will be found to follow the free use of anodynes immediately after the occurrence of the accident, and their continuance, as well for the purpose of prolonging sleep as of assuaging pain and quieting the mind, is always proper. Long observation in hospitals has so convinced me

of the beneficial effects of anodynes after severe injuries, that I cannot too strongly recommend their judicious employment. No theoretical considerations should interfere with their use."

The concluding portion of the essay is devoted to an examination of the circumstances under which secondary amputation may become necessary. In cases of *traumatic gangrene*, though acknowledging that the question of immediate amputation is still an open one, Dr. Norris says that he has himself always waited for a line of demarcation to be formed, and that he has as yet seen nothing which would lead him to deviate from this practice. *Secondary hemorrhage*, which may follow the separation of sloughs or may result from the pressure of an edge of bone on an adjoining artery, often necessitates amputation, though in favourable cases Dr. Norris deems an effort to save the limb by securing the main artery justifiable. *Secondary implication of joints, non-union of the broken bones, and exhaustion from profuse suppuration*, are also circumstances each of which may occasionally render imperative a resort to amputation. Removal of the limb is also sometimes desired by the patient at a later period, on account of deformity, atrophy, liability to ulceration, etc. The surgeon should not under such circumstances at once consent to operate because his patient wishes him to do so, but

"must determine, by a careful examination of each individual case, whether the extent of disease, pain, incapacity for business, and inconvenience suffered, are sufficient to call for a resort to this extreme measure."

We cannot close this volume without congratulating the surgeons of America, and more especially of Philadelphia, upon its publication. *PHYSICK*, and quite recently *BARTON*—perhaps the brightest names in the annals of Philadelphia Surgery—have gone from us, leaving no record of their work save in old numbers of journals, or in the occasional references found in the writings of others; let us be thankful that in the pages of this volume there has been set up, while its distinguished author is still in our midst, an enduring monument which will worthily honour the name of *NORRIS*, so long as the Art of Healing itself shall survive.

J. A., JR.

ART. XIII.—*The Pathology, Diagnosis, and Treatment of Diseases of Women, including the Diagnosis of Pregnancy.* By GRAILY HEWITT, M.D. Lond., F.R.C.P., Professor of Midwifery and Diseases of Women, University College, and Obstetrical Physician to the Hospital, etc. etc. Second American from the third London edition, revised and enlarged. 8vo. pp. xxii., 751. Philadelphia: Lindsay & Blakiston, 1872.

Clinical Lectures on Diseases Peculiar to Women. By LOMBE ATTHILL, M.D., University of Dublin, Obstetrical Physician to the Adelaide Hospital, Dublin, etc. etc. Second edition, revised and enlarged. 12mo. pp. xv., 241. Philadelphia: Lindsay & Blakiston, 1873.

THAT Dr. Hewitt's work has reached its third edition in England and its second in this country, fully attests its value, and shows that there is a demand for it by the profession. The same is true of Atthill's *Clinical Lectures*, the first edition of which was published in 1871, and shortly afterwards reissued in America, and now a year later a second edition is called for, and issued nearly simultaneously in both countries.

Dr. Hewitt's book has undergone radical alterations, both in its arrangement and in the doctrines which it advocates. The former was very desirable, as the author's plan detracted from the value of the book as a work of reference. This is, to a certain extent, true of the arrangement of the present edition, but it need not claim further attention.

Of much more importance is the change of doctrine which our author enunciates. For years past it has been too evident that the tendency of gynæcologists was towards a mechanical explanation and treatment of the diseases peculiar to women. That this is true, is proved by the innumerable varieties of instruments that form the armamentarium of him who practises this branch of our profession. With a host of specula and probes for their examination; with redressers, knives, scissors, tents, and numberless bandages; with pessaries, vaginal and intra-uterine, the gynæcologist has been moving about among his patients, and endeavouring to relieve their ills. If he has found his instruments insufficient, our author has added to his list, and if he wants support for his mechanical doctrines and treatment, our author furnishes it. Dr. Hewitt is a firm believer in the utility of pessaries, but in this it must be admitted that he is perfectly consistent, since he almost ignores the existence of any uterine disease excepting displacements. This constitutes the peculiarity of this edition of his book, and the reader cannot but be struck with the absence of anything in relation to inflammatory diseases. What he calls the mechanical system of uterine pathology is put forward earnestly, and urged by the author with all his force. The fact that this was not done until the book has reached the third edition, and that this opinion is based on "daily observation for four or six years past" (preface), makes it necessary for us to examine Dr. Hewitt's views somewhat critically.

He publishes in his first chapter an analysis of 813 cases (page 5) which came under his observation at the University College Hospital, from August, 1865, to December, 1869. Of these, 99 may properly be excluded from consideration, 60 being cases of pregnancy, and 39 being sufferers from "ailments or discomforts of pregnancy." Of the remaining 714 women, 377 were suffering from displacements. Of these, 184 were anteversions or flexions, 112 cases of retroflexion, and 81 had prolapsus, while inflammatory diseases of the uterus proper do not appear in the list. In other words, rather more than 50 per cent. of all the women who suffer from diseases peculiar to their sex are the victims of some form of displacement. Of these, according to our author, flexions and versions are the most important, there being 296 cases of these to 81 of "prolapsus of the uterus, vagina, etc." Inflammation of the organ is ignored, except as a consequence of these displacements, though, as such, our author says that it exists frequently enough. In this, his doctrine is in striking contrast to that of Dr. J. Henry Bennett, who as positively asserts that the displacement is the result of inflammation, and that, if unaccompanied by this, it produces no symptoms. These two authorities may be taken as fair exponents of two rival doctrines of uterine pathology, both of which have been more or less fully promulgated since the famous debate upon this subject in the Academy of Medicine at Paris, in 1864.

The radical differences of these opinions prevent their being harmonized, and one is almost lost in despair when he remembers that both appeal to personal experience to support their views. Bennett asserts, in his work on the uterus, that he has frequently seen version or flexion of the organ which produced no symptoms, and that when he had conquered the

inflammation, the uterus either regained its normal position, or, if still displaced, ceased to produce trouble. Hewitt, on the other hand, replaces the womb, restores the impeded circulation, and removes the compression of the nerves by his mechanical support. It will not do to assert that either of these gentlemen has erred in diagnosis. Hewitt's table is particularly valuable, since he examined all his patients himself, and states that he is personally and individually responsible for the accuracy of his facts.

In this connection, one point deserves consideration. The cases tabulated came to a hospital and clinic for diseases peculiar to women, and were therefore presumably suffering from some disorder. Our author nowhere mentions that he has at any time examined healthy individuals, and we all know how easy it is to conclude that a certain local condition and a coexisting group of symptoms bear to each other the relation of cause and effect. In order to clear up this uncertainty, it is necessary to examine the genital organs of a number of healthy women. A few persons have had the opportunity to pursue these investigations in lock hospitals and in the venereal wards of general hospitals. The writer has repeatedly examined prostitutes in the wards of the Philadelphia Hospital, whose uteri were flexed, and who had never suspected that they had uterine disease, and who would not admit that they had any symptoms of these disorders. Mr. Paul Dubois long ago called attention to the same fact, and it has been corroborated by the investigations of Goupil at the Lourcine Hospital at Paris. (*Clin. Memoirs on Dis. of Women*, Syd. Soc. Ed.)

These conclusions, as well as those of Dr. Hewitt, are the results of personal observation and experience; but they are more important, because they were reached after the examination of women who were not known to be suffering from uterine diseases. The conclusion that versions and flexions of the uterus may exist without producing any symptoms cannot be avoided, nor is it less rational to believe that the morbid phenomena which attend these displacements are often the result of the accompanying congestion or inflammation, which follow as the almost inevitable result of these, when they are acquired. In these cases every practical gynæcologist knows to what extent the fundus uteri will enlarge, how tender it will become, and in some instances what are the results of pressure upon the neighbouring organs. It is not more difficult to see how congestive or inflammatory diseases of the uterus lead to displacements.

The incorrectness of the mechanical pathology of these affections is constantly illustrated by the results of treatment. The follower of Dr. Hewitt will find that the simple reposition of the uterus, and maintaining it in position by one of the various modifications of the pessary, which our author advocates, will frequently fail. When the displacement has been produced suddenly, and the instrument has been fitted before the secondary congestion or inflammation has led to any permanent changes in the tissues of the uterus, the pessary may "act like a charm," and speedily cure the patient. If the case have progressed further, however, experience has demonstrated that these mechanical contrivances, which our author so earnestly advocates, may do harm rather than good.

The truth here, as in most other things, seems to be on the middle ground. If the pessary can be worn with comfort it may support the displaced organ, and, by removing pressure from the nerves and blood-vessels, aid in the treatment of the inflammation. As such it is an adjuvant never to be disregarded. On the other hand, the organ may be so tender that inflammation will have to be partly subdued before the physi-

cian can avail himself of this mechanical assistance. If Dr. Hewitt will allow himself to be uninfluenced by any peculiar dogma or preconceived opinions, we cannot but believe that bedside observation will show him that the views just enunciated are correct, while the mechanical pathology, though containing some truth, is in the main incorrect, and leads to dangerous conclusions in regard to treatment. How our author can shut his eyes to these facts it is impossible to tell, and it is equally strange that he fails to recognize that his countrymen have cured these displacements by disregarding them entirely and treating the accompanying inflammation. The writer has observed the same thing, and it would be illogical to conclude that Dr. Hewitt's patients are peculiar or in any way different from those of his professional brethren. A striking example of the influence of the treatment of what Dr. Hewitt calls the inflammatory complication of flexion recently came under our observation in a patient who was under the care of our colleague, Dr. Girvin, of the Presbyterian Hospital of Philadelphia. The woman had travelled a long distance to be cured of extreme ante flexion of the uterus, the result of inflammation. Pessaries, including the one devised by our author for this displacement, were faithfully tried, not only without affording any relief, but rather to the injury of the patient. Dr. Girvin then abandoned the mechanical treatment, and, by local depletion and intra-uterine medication, straightened the uterine cavity in a short time. Such cases are peculiarly instructive.

Perfectly consistent with his mechanical pathology, Dr. Hewitt abandons the classification of cases of dysmenorrhœa which was adopted in the last edition of this work. That his views are in a great measure correct cannot be denied, but they are too exclusive. One of the worst cases of dysmenorrhœa, which the reviewer has ever seen, was unattended by any uterine displacement save possibly a slight descent of the organ in the cavity of the pelvis. The womb was inflamed, the lining membrane intensely vascular, and the internal os so relaxed that a large sound was passed with the greatest facility. The discharge at her periods was profuse, and was attended with the most excruciating dysmenorrhœal pain. Whether this was owing to the profuse flow of blood, its retention and coagulation in the enlarged uterine cavity on account of the rapid discharge, or whether its passage from the uterus was impeded by spasmodic contraction of the fibres about the internal os, we shall not attempt to decide, but the practical fact remains the same, that dysmenorrhœa does not always have its origin in mechanical obstruction from flexion. This, however, does not vitiate the conclusion that our author has done a good work by insisting upon the importance of flexions as a cause of dysmenorrhœa in contradistinction to deficient size of the external os. Although many authors still adhere to the opinion that the latter is the seat of obstruction, we confidently believe that a more careful examination of the subject will prove that the flexion is a much more frequent cause.

In accordance with the same mechanical pathology, Dr. Hewitt has advanced a new doctrine in relation to the association of nausea and vomiting with uterine flexion. This he first promulgated in a paper, read before the Obstetrical Society of London (*Transactions*, vol. xiii. p. 103), in which he stated that the vomiting of pregnancy is due to flexion of the gravid uterus. This opinion is reasserted in the present edition of his book, and it is further stated that nausea and vomiting, as a symptom of uterine disease, has its origin in the same condition of the unimpregnated organ (page 430). Those who have read the discussion which followed

the presentation of his paper, remember how this proposition was met by the Obstretrical Society of London. The weight of authority and experience was thrown against Dr. Hewitt. Immediately afterwards the writer of this review began to study this subject, and examined a number of women, victims of the nausea of pregnancy, and he can only say that he made no observations which would confirm the statements of Hewitt.

In relation to the association of these symptoms with uterine disease the matter is somewhat different. The author says (p. 431) :—

“Every case of flexion is not attended with nausea and vomiting, but in a considerable number of cases these symptoms are present, more or less in marked degree. The general rule on the subject is that in cases of ante flexion the nausea or tendency to vomiting is rather commonly observed. Also, it is found that aggravated cases of retroflexion afford the most aggravated instances of nausea and vomiting, though these extreme degrees of retroflexion are not necessarily, by any means, attended by such vomiting.”

That there is an association between uterine disease and irritability of the stomach is a well-established fact, and, we believe, it is true that this symptom is more frequently connected with flexions than with other, and especially inflammatory, diseases of the uterus. But we cannot agree with the author that this tendency “is rather commonly observed” in ante flexion. On the contrary, we have not only met with the worst cases of it in retroflexion, but have more frequently seen it associated with this displacement than ante flexion.

The connection between the two was forcibly illustrated by a young lady who was under the writer's care last fall. She had always been in perfect health until about three months before, when, although married and childless, she had an abortion induced at the end of the second month. She did not lie in bed a single day. Shortly afterward she began to complain of dragging pains in the back and pelvis, dysmenorrhœa, nausea, and vomiting. Several physicians treated the condition of the stomach, and one made local applications to the uterus without any relief. When she came under our care she was in bed, emaciating rapidly, and we really entertained her own fear that she should starve to death on account of the irritability of the stomach. Upon examination the uterus was found sharply retroflexed and enlarged, but the fundus was not tender, and the os and lining membrane appeared to be healthy. The position of the organ was restored, and it was kept in place by the closed lever of Hodge. This truly “acted like a charm.” Magic could have wrought no such wonder. The next morning our patient was out of bed; the nausea and vomiting had gone and never returned; she rapidly regained flesh, and, when seen again, a few months later, she was a handsome blooming woman.

Such cases make a strong impression upon a physician's mind, but they illustrate the exceptions, not the rule. In other cases of retroflexion the pessary has worked no such marvellous cure; indeed, we have been forced to abandon it, while our patients improved just in proportion as the inflammation of the fundus was diminished. Here, too, the author claims too much for his mechanical pathology. It contains some truth, but much that is unsound.

These are the principal changes in the present edition of this work. We close the book with keen regret, for, notwithstanding his vagaries, we have always admired the author. This very feeling makes it more painful to say that we regret that this edition has been published. It will not add to the reputation of the eminent professor at the University College, and

the ex-President of that honourable body, the Obstetrical Society of London; but, on the contrary, it proves its author to be like the quarrelling knights in the old story of the shield by the wayside. He can see but one side at a time, and he unfortunately affords us another illustration of how men, good and true, allow themselves to be carried away by a single idea. Such examples as this make us wonder if the old fact, that truth does not lie in extremes, but in the middle ground, will ever be generally recognized.

In the present edition of Dr. Atthill's work he reiterates his views in relation to the use of nitric acid applied to the interior of the uterus.

The chief addition to the work is a chapter upon "Enlargements of the Uterus," which will well repay careful study.

J. S. P.

ART. XIV.—*Skin Diseases: their Description, Pathology, Diagnosis and Treatment.* By TILBURY FOX, M.D. Lond. Second American, from the third London edition, rewritten and enlarged, with a Cutaneous Pharmacopœia, a Glossarial Index, and sixty-seven additional Illustrations. 8vo. pp. xiv. 532. New York: Wm. Wood & Co., 1873.

In place of the moderate-sized volume of some three hundred pages which we have been accustomed to look upon, we have now before us a large, handsome octavo almost double in size. Not only are decided alterations in the text everywhere to be noticed, but we also observe the introduction of a large amount of new matter, as well as numerous illustrations, which constitute a new feature in the book. The original volume, indeed, has undergone such radical changes that the present edition must almost be regarded in the light of a new treatise.

The author states that the work has been written to meet the wants of the practitioner in his daily dealings with disease, and at the same time to serve as a text-book for the student. He has succeeded well in his purpose, we think, and has produced a most excellent book, one which will be of great service to the student and also to the profession at large.

The introductory remarks are well selected, and give at once a healthy tone to the volume. Our author says:—

"He who would be a successful dermatologist, I have always held, and hold more strongly than ever, must also be a proficient in the principles of general medicine. The successful study of skin disease necessitates a knowledge on the part of the student, whoever he may be, of diseases in general, and he alone can treat cutaneous ailments satisfactorily who is master of the details of general therapeutics. The same disease, as it occurs in persons of different diathetic tendencies, requires to be handled in a somewhat varying manner. Eczema, for instance, in an old and gouty, a young and pallid, or a scrofulous subject, requires not the same, but modified treatment to meet the circumstances of each particular case. The rank specialist or mere empiric would diagnose the eczema, pay no heed to the diathesis, and employ a therapeuté, which he has stereotyped as suited to eczema under all conditions. The philosophic practitioner, bringing into use his knowledge of medicine in general, would be careful to take advantage of known specifics; but he would treat any constitutional condition which tended to aggravate the main disease or to prevent reparative action; and he would rectify errors of function or departures from healthy action in organs and parts which, bearing relation by interdependence of function, thereby influence for evil the already diseased skin."

Such views as these carry with them sound doctrine, which, in our estimation, cannot be too often or forcibly repeated.

The chapter devoted to the mode of studying skin diseases is one of the best in the book, and abounds in original ideas. Our author here lays down a number of rules for study, which, if observed, will greatly facilitate diagnosis and enable the student to come to at least a rational conclusion as regards the case at hand. These few pages contain excellent advice clothed in plain but clear language. The following remarks are deserving of widespread dissemination, expressing, as they do, facts which are neither generally known nor fully recognized. Extensive international travel, together with a free interchange of experiences on the part of dermatologists, have done much within the last few years to clear away the mystery in which certain diseases were enveloped. Dr. Fox remarks:—

“There are differences in the same disease, as seen in this and other countries, as well as a distinction to be drawn between the several kinds of cutaneous affections occurring in England and abroad. For instance, the lichen ruber of Hebra is rarely seen in England, and not only less frequently, but also not in such a marked form as in Vienna. Lupus in Vienna is, on the whole, a much more severe disease than in England. Again, the prurigo of Hebra does not occur in England, save as the greatest rarity. It would seem too, that it is not the same severe disease here in external characters and behaviour. Parasitic sycosis is common in France, rare in England and Vienna. Psoriasis is infinitely more common in England than elsewhere, and urticaria in America, and so on. I lay much stress on the fact that differences in the same disease are seen here and abroad, and for this reason: That I wish it to be understood that the descriptions given by foreign writers of skin disease, whilst, in the main, they apply correctly to English skin diseases, yet vary in many important particulars, and, unless the student realizes this fact, and many do not, he will be sure to be confused in his reading. Conversely the descriptions given by English authors will not represent accurately the characters of diseases as seen abroad. There is, indeed a nationality of disease as well as of character or physique.”

After a short chapter upon the anatomy of the skin, introduced into the work for the first time, wherein the recent studies of Biesiadecki are followed, our author offers some remarks upon the general pathology of the skin, including a description of elementary lesions. He prefers the clinical to the pathological system of grouping, considering that the purely histological standard-point cannot yet be adopted for classification, and that the etiology, clinical history, character, and course of skin diseases must be taken into consideration. The following plan is proposed:—

1. Eruptions of the acute specific diseases (zymotic).
2. Local inflammations, comprising urticaria, eczema, psoriasis, etc. etc.
3. Diathetic disorders, including syphilis and leprosy diseases.
4. Hypertrophic and atrophic diseases, under which head are included ichthyosis, keloid, etc., and the atrophies.
5. New formations including cancer and lupus.
6. Hemorrhages.
7. Neuroses, as pruritus, etc.
8. Pigmentary alterations.
9. Parasitic diseases.
10. Diseases of the glands and appendages, including lichen tropicus, seborrhœa, acne, etc. etc.

The zymotic diseases are summarily discussed, short descriptions alone being given of the eruptions themselves for purposes of diagnosis. The disease called *Frambœsia*, or Yaws, here receives considerable attention, more, perhaps, than we should expect, considering that it does not occur in England. It is, however, a disease about which there has been much discussion of late, and the paper, strengthened by recent information, is interesting. The affection is also called *mycosis* and *pian*, and is almost

entirely confined to the African race. The testimony of the present day is against its being connected with syphilis, as was formerly supposed.

Under the head of Plastic or Papular Inflammations our author includes the Lichens, Strophulus, and Prurigo. Of the first he makes three forms, *L. simplex* (the *Eczema papulosum* of German and American writers), *L. planus*, and *L. scrofulosorum*. Lichen planus, a form of disease encountered and accurately described by Erasmus Wilson and so named by him, is considered to be the same disease as the Lichen ruber of Hebra, showing itself in England, however, in a milder form than in Austria. This is an important observation, and seems to be fully corroborated by the experience of Dr. Fox, he having met with several cases of the severe *L. ruber* of Hebra as well as a number of cases of *L. planus*.

Another disease in which our author has especially interested himself of late, and for which study special thanks are due, is prurigo, about which the greatest confusion has heretofore existed in England. He has done English dermatology a great service by disentangling this disease from the numerous other conditions with which it was continually confounded by English writers. Dr. Fox gives the following lucid description of the affection :—

“This disease is essentially a chronic inflammation of the skin, which expresses itself in the first place by the development of peculiar papulæ, and subsequently general thickening of the skin, and moreover, by intense pruritus at every stage of its course. It is a very uncommon disease in England, emphatically so in its severest form, which is seen pretty often in Vienna. I have been on the lookout for a case of the most marked form of disease, such as Hebra describes, for years past, and have only met with one case in England. In describing prurigo, it is most necessary to state *what prurigo is not*, for the reason that the word prurigo has been applied to several entirely distinct diseases in the loosest manner possible, and there is an abiding desire to rank under it diseases the most diverse *en masse*. I will, therefore, give in detail the characters of true prurigo, and then enter into particulars relative to the various diseases that have been and are likely to be confounded with it. The disease, I may say here, is not phtheiriasis (prurigo senilis of older authors). Prurigo occurs in two forms, a slighter and a severer form, to which the terms *mitis* and *ferox*, or *agria*, may be respectively applied. Prurigo *mitis* is characterized by the development of flesh-coloured papules, *in an isolated and scattered form*, of the size of a couple of pins’ heads put together, or a little larger. These papular formations are attended by intense pruritus, which induces the patient to scratch and to excoriate the papules, which then become covered at their apices by dried blood-scales. Sometimes the papules are very deeply excoriated. There are also papules to be felt rather than seen on the skin, and if the finger be passed over the affected part they feel shotty and hard. . . . The eruption, therefore, consists of certain papules, altered by scratching, and accompanied by intense itching, as *primary* and essential phenomena.”

Prurigo *ferox* is next described, our author judiciously accepting Hebra’s description for his text. This form of the disease is very rarely encountered in either England or America.

Dr. Fox divides eczema into three varieties; *E. simplex*, localized and without appreciable general symptoms; *E. rubrum*, more or less general and inflammatory in its attack, as regards not only its local inflammatory phenomena and implication of the deeper tissues, but the disorder of the system generally; and *E. impetiginodes*, in which the pus formation is not accounted for by the degree of inflammatory action. Eczema is regarded as a catarrhal inflammation of the skin, having its analogue in catarrhal inflammation of the mucous membrane. Great stress is laid upon this view, though we confess to being unable to see why it should be con-

sidered of such importance. Our author holds that the main feature of eczema is the presence of a peculiar discharge, which dries into thin yellow crusts. However long-standing the disease may be, it will always furnish evidence in its history of the fact that it has been moist at one time or another. Such being the case, the dry *E. papulosum* of writers is not admitted to be an eczema, but is placed under the head of Lichen, just where Willan arranged it. This view, which the author clings to tenaciously, we consider unfortunate, for it seems to us to be in opposition to all the most recent researches as well as clinical experience. Dr. Fox is one of the few writers of the present day who still holds to the old ideas concerning the division of eczema.

Our author is by no means settled in his views concerning the nature of impetigo contagiosa, a form of disease first described by him. As is well known it has been asserted by some that the disease is one of parasitic origin; but Dr. Fox does not accept this theory as a cause of the trouble. The whole character of the disease, he maintains, with its febrile disturbance, its vesico-pustular aspect, the definite course of each vesico-pustule like that of an herpetic vesicle, is utterly unlike the course of a parasitic affection. Though a well-known disease, and readily amenable to treatment, its nature still remains obscure.

Under squamous inflammation we are to include two diseases, pityriasis rubra and psoriasis. Our author describes the first of these, pityriasis rubra, with a free pen, and speaks of having often encountered the disease. It is a rare affection, according to the experience of most dermatologists, and one whose record as a primary form of disease is by no means clear. It is for this reason that the following account of it will prove interesting:—

“Pityriasis rubra is a primary form of disease characterized essentially by general hyperæmia of the superficial parts of the skin, and hyperplastic growth of the cuticular layer. The disease commences oftentimes in those who have had a good deal of mental anxiety, or who have been working laboriously, and the first signs are redness and scaliness in some parts of the body. Presently the patch begins to extend, and then the surface of the whole body speedily becomes, within a fortnight or so, hyperæmic—of a deep red colour, which is lessened by pressure, and is accompanied by constant exfoliation of branny lamellar scales, but without any exudation or infiltration of the skin, or any discharge at all from it. The sudden development of the disease, and the way that it spreads, so as to implicate the entire body, are very characteristic. The developed disease varies but little in aspect during its whole course. The patient sometimes does not complain of much inconvenience in the way of itching, but I have generally found that patients are tormented by “burning heats.” The desquamation, when the disease has fully developed, may be very free and extensive; the whole cuticle of the hand may peel off *en masse*, as it were, and the amount of scales shed day by day may be prodigious. About the arms especially the scaliness may be markedly imbricated in regular order, like the tiles of a house, the white fringing presented by the edges of the flakes contrasting with the red hyperæmic surface exposed beneath the white flaky masses. The nails, one or even all, may be shed.”

Dr. Fox believes that the disease consists in an hyperæmia of the upper layer of the cutis, involving its longitudinal plexus of vessels, with hypertrophy of the cuticle. Secondary hypertrophy of the fibro-cellular textures may follow in the latter stages of the disease, but this he does not believe to be a necessary part of the disease. He denies emphatically any connection between the affection and eczema.

The chapter upon Leprosy, or Elephantiasis Græcorum, is very complete. The author's experience with this disease in the East and elsewhere, renders his views particularly valuable. The various forms of treat-

ment which have been recommended, including the method of Dr. Beauperthuy, are carefully considered, and the conclusion arrived at that, by means of strict hygienic measures, in connection with fresh meat and other articles of diet, much can be done for the patient's relief.

Under the name Fibroma Fungoides, Dr. Fox describes a form of fibroma of which he has seen four examples. It differs from fibroma moluscum in that it has a tendency to ulcerate, showing at the same time great vascularity. A synopsis of these four cases is given, but the histories are too short and incomplete to allow of any opinion being formed by the reader as to the nature of the disease. A remarkable wood-cut accompanies one of the cases, which certainly represents a very curious form of disease. The account of the neuroses of the skin, under which head our author comprises hyperæsthesia, anæsthesia, and pruritus, is short and rather unsatisfactory.

The diseases due to vegetable parasites are grouped together, and called by the generic term tineæ. Ten parasitic diseases are described, several of which, it appears to us, might have been omitted, inasmuch as they are not diseases, but forms which the same fungus assumes in different parts of the body. We refer to disease produced by the trichophyton.

We notice with some surprise that our author still adheres zealously to the idea of there being a fungus in connection with the affection alopecia areata, or tinea decalvans, as he calls it. The supposed fungus of this disease is here shown by several well-worn wood-cuts, which unfortunately exhibit nothing distinctly. One of them shows absolutely nothing, being simply a complete blur, with no sign of anything like fungus, while the other portrays a part of a hair with spores, magnified less, probably, than a hundred diameters, yet the spores being represented as large as those of the trichophyton with a power of two hundred diameters. Now, when we are informed that the spores are from $\frac{1}{25000}$ to $\frac{1}{5000}$ of an inch in size (*very much smaller* than the trichophyton, these being estimated at about $\frac{1}{5000}$ of an inch), it is manifest that there is a great discrepancy in the proportion of the size of the hair and the spores upon it. To say the least, the drawing is a poor one, and would mislead, supposing fungi to be present. We should be pleased to agree with the author in his conclusions concerning the nature of this disease were sufficient proof presented; but in the paper before us we fail to find this proof, or, indeed, any new investigations which tend to the support of the microsporon Audouini.

The latter part of the book bears evidence of haste in its preparation, some of the chapters being too short to do full justice to the subject. Diseases of the nails, for instance, receive but one page, while acne is disposed of in four.

As before alluded to, the work is illustrated with drawings of pathological conditions, borrowed almost exclusively from the works of Neumann, Biesiadecki, and Auspitz, though in point of execution scarcely up to the originals. We are pleased to observe their introduction, however, into the present volume, for they are well selected, and also serve as a friendly recognition on the part of English dermatologists of those who have accomplished so much in their specialty.

In conclusion, we cordially recommend this book to those who may desire to become acquainted with the modern views of cutaneous diseases. It is the only treatise upon skin diseases, penned by English hands, which gives any idea of the strides dermatology has made within the last ten years.

L. A. D.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XV.—*Guy's Hospital Reports*. Edited by C. HILTON FAGGE, M.D., and ARTHUR E. DURHAM. Third series. Vol. XVIII. 8vo. pp. xviii., 502. London: J. & A. Churchill, 1873.

THE contents of the present volume of this valuable series equal in variety and interest those of its many predecessors. Among the contributors to it are Drs. Wilks, Moxon, Hilton Fagge, and Habershon, and Messrs. Cooper Forster and Bader, all of whom are well known as writers. In accordance with our custom, we shall lay before our readers abstracts of the most important papers, and shall first call attention to those on medical subjects.

On Acute Dilatation of the Stomach; by C. HILTON FAGGE, M.D.—Although chronic dilatation of the stomach, whether dependent or not upon obstruction at the pylorus or in the small intestines, is a condition which has long been recognized. Dr. Fagge thinks that up to the present time its physical diagnosis has not been carefully studied. It would be a great mistake, he says, to suppose that an enlarged stomach differs from the healthy organ, simply in occupying a larger part of the abdomen. On the contrary, a constant feature of these cases is that the organ is greatly displaced downwards; the gastro-hepatic omentum, the lesser curvature, and the cardiac extremity of the stomach, being all much elongated. Hence, instead of the dilated stomach forming a prominence in the epigastrium, that region is more or less deeply hollowed, whilst below the umbilicus one may observe a large rounded tympanitic swelling. But, he continues, the most distinctive feature of dilatation of the stomach in these cases, and that which enables the exact position of the organ to be most accurately determined, is afforded by the peristaltic movements of its muscular coat. These usually begin near the left costal cartilages, descend below the umbilicus, and after passing over to the right, terminate by ascending more or less towards the right hypochondrium. The movements of the small intestines, so frequently seen in cases of chronic intestinal obstruction, present very different characters; and in the transverse colon direct peristalsis would produce a wave passing from right to left, or in the reverse direction to that which has been described as belonging ordinarily to the gastric contraction. It must, however, be remembered that in both forms of disease, anti-peristaltic movements may and do occasionally take place.

Acute dilatation of the stomach, although occurring oftener than is perhaps suspected, is a very rare affection, Dr. Fagge having been able to collect only four cases. One of these he saw in consultation, another was treated by Dr. Rees in Guy's Hospital, the third is recorded in the fourth volume of the Transactions of the London Pathological Society, and the fourth is reported by Dr. Bennett in his work on the *Principles and Practice of Medicine*. The first is especially interesting, because the diagnosis was fully made, and the proper remedies applied during the life of the patient. He was a young man, eighteen years of age, of tall but spare frame, and although until fourteen days before he was seen by Dr. Fagge, he had been in the enjoyment of his usual health,

he was probably not possessed of a very robust constitution. Upon examination the abdomen was found to be greatly but not uniformly distended. For while the whole of the lower part of the belly was full and rounded, and the left hypochondrium was equally so, the right hypochondrium was flat, or even slightly hollowed. The separation between the rounded and flattened region was indicated by an oblique line descending downwards and to the right from the upper part of the left hypochondrium. Every time the patient breathed, this line could be seen to descend a little. The principal symptoms were constant vomiting of a greenish liquid, as much as a pint being brought up at a time, and pain in the abdomen. There was a tendency to constipation, and to suppression of the urine. The symptoms were relieved at first, but afterwards returned in full force; the vomiting, however, again ceasing before the patient was visited by Dr. Fagge, who at once came to the conclusion, that whatever the original disease might have been, his distress was then mainly caused by dilatation of the stomach, and that this organ contained a large quantity of fluid, but was paralyzed from over-distension, and unable to rid itself of its burden. He therefore determined to use the stomach-pump and empty the stomach, feeding the patient for a few days by nutrient enemata, and in this way giving the organ complete rest. The tube of the stomach-pump was accordingly introduced, and as soon as it had entered the stomach a few ounces of fluid, similar to that previously vomited, were ejected through it with considerable force; and when the pump was put into action, seven pints more were removed. The effect of the operation upon the contour of the abdomen was very marked, and together with this there was complete relief from pain. The improvement was unfortunately only temporary, for two hours and a half later the patient died. At the autopsy the stomach was found only moderately dilated, but when it was pulled down by means of the omentum, it could be made to come considerably below the umbilicus. A little patch of lymph was discovered at one spot on the peritoneum, passing from the large bowel to the mesentery of the small intestine. During the necessary manipulations, the serous membrane gave way at this spot, and a thin fetid fluid with air exuded. This was found to come from a large cavity situated behind the ascending colon, gall-bladder, and other parts, all of which were fixed together by firm fibrous adhesions of old date. A finger passed through the pylorus went straight into this cavity, and it was at first supposed that the whole calibre of the second portion of the duodenum had sloughed away. Subsequently, it was found that the duodenum passed down on the inner side of the cavity. Besides a considerable quantity of fetid fluid, the cavity contained a large-sized slough, some inches long, apparently the remains of a mass of connective tissue. Dr. Fagge apparently attaches very little consequence to this lesion, but it is impossible to conceive that it was without an important bearing upon the result of the case.

In the other three cases the enlargement of the stomach was much more considerable. In the case reported by Dr. Rees, "when the abdomen was opened the stomach was almost the only organ visible. The stomach passed from the under surface of the diaphragm downwards as far as the pubes; an oblique line traced in this direction, was found to measure thirteen inches. The organ then bent sharply upwards to reach the under surface of the liver, where the pylorus lay in its natural position; a line traced obliquely upwards from the lower end of the other line at the symphysis pubis, measured eight and a half inches."

Dr. Fagge, from a careful study of the four cases reported in this paper, thinks the following conclusions justifiable: 1. Acute dilatation of the stomach

may arise in young subjects, in whom that organ has previously been apparently healthy. The actual progress of enlargement is more or less gradual; but it produces at first no symptoms, and when these occur they are hidden in their onset, and of great severity, and may destroy life in a few days. Acute dilatation of the stomach may be the only disease found in the body after death, as it may have supervened upon some other morbid change in the alimentary canal. 2. Its signs are, (a) a rapidly increasing distension of the abdomen, which is unsymmetrical; the left hypochondrium being full, while the right hypochondrium is comparatively flattened; (b) The existence of a surface-marking descending obliquely towards the umbilicus from the left hypochondrium, and corresponding to the dropped-down lesser curvature of the stomach, this line appearing to descend with each act of inspiration; (c) The presence of fluctuation in the lower part of the abdomen; (d) The occurrence of splashing when the distended part is manipulated; (e) The presence of an uniformly tympanitic note over a large part of the distended region when the patient lies on his back. Above the pubes, on the other hand, there may be dulness on percussion simulating that of a distended bladder. 3. Its symptoms are those of severe abdominal disease, without evidence of peritonitis or lesion of the intestines. There is very profuse vomiting, so that several quarts may be evacuated in the twenty-four hours. After a time, however, vomiting may cease entirely, the stomach being paralyzed, and unable to rid itself of its contents. There is no absolute constipation, although the bowels may be more or less confined. The urine is scanty. 4. After the removal of the stomach from the body, and the escape of its contents, it may shrink back to its natural size, no matter how great its previous enlargement, and the only remaining indication that it had undergone extreme distension, may be the presence of slight lacerations of its coats.

The treatment which he recommends is that which he adopted in the case which has been so fully referred to in this notice.

In the case reported by Dr. Bennett, the patient a few days before his death swallowed two or three bottlefuls of effervescing lemonade, and the dilatation of the stomach was believed to have arisen from the sudden disengagement of a large quantity of gas. No cause is assigned for the occurrence of the condition in the other three cases. In two of the cases *sarcinæ* were discovered in the matter vomited in greater or less number. In both these instances numerous ecchymoses were found in the mucous membrane of the stomach, a fact of some interest as bearing upon the opinion lately advanced, that, instead of being vegetable organisms, *sarcinæ* arise from aggregations of blood disease.

A Case of Patent Ductus Arteriosus; by C. HILTON FAGGE, M.D.—In volume sixteen of the present series of these Reports, Dr. Fagge describes a case in which a murmur was audible different in character from any bruit he had ever before heard. Two views as to its cause suggested themselves to his mind—one that it was due to a communication between the aorta and the pulmonary artery; the other, that it was a modification of an auricular systolic murmur. Last year the patient returned to the hospital and died there. On post-mortem examination it was found, that the only lesion to which the peculiar bruit could be attributed was a patent ductus arteriosus. The peculiar features in the case were extreme slowness of the pulse, and the presence of a wavy, partly musical murmur, audible at the second left costal cartilage, extending considerably to the left of the sternum along the cartilage, not carried along the sternum downwards, following the second sound, but not everywhere continuous with it, and separated from the next first sound by a considerable interval. Very few cases are on record in which a persistent ductus arteriosus has been believed

to have given rise to a murmur. In the first volume of the *Transactions of the Pathological Society of London*, a case is recorded by Dr. Babington, which is the only one mentioned by Walshe. Prof. Jaksch reports a case in the *Prager Vierteljahrschrift*, for 1862, in which there was a murmur similar to that heard in the case reported in this paper. On post-mortem examination the foramen ovale was patent, as well as the ductus arteriosus.

In some *Remarks on Diseases of the Nervous System, with Cases*, Dr. WILKS complains, that, notwithstanding the light which recent physiological investigations have thrown upon the functions of the brain and spinal cord, we continue to make use of the terms "cerebral" and "spinal" paralysis. Physiologists of the present day regard the spinal cord as consisting not only of that part of the cerebro-spinal axis situated within the vertebral column, but also of the nervous centres from which the cranial nerves take their origin, seated upon its summit. The cerebrum, or brain proper, is the large mass which covers and incloses the upper part of the spinal cord, and which receives impressions from all parts of the body, as well as from the special senses, converts these into perceptions and mental processes, and develops a volitional power which affects the cord below and through this the body at large. Disease of the brain will indeed produce delirium or dementia, but it cannot cause paralysis, which, on the other hand, is caused by any change in the spinal cord. The only exception to this rule (and Dr. Wilks regards it as only an apparent exception) is furnished by those cases in which general arachnitis or the like has, by an interference with the volitional power, been accompanied by a want of movement in a limb.

The author next considers the pathological connection between the nerves and cerebro-spinal centres, saying that there is every reason for believing, that, owing to the direct connection between them, a peripheral portion of the body might be affected from the centre, or, on the other hand, the centre from the periphery, entirely through nervous agency. Several cases are reported and others referred to, in which a local injury resulted in paralysis of other parts. The changes in the nervous centres and in the muscles in progressive muscular atrophy and in locomotor ataxy, are also regarded by Dr. Wilks as dependent one upon the other, although, since the pathology of both these affections is still obscure, it is impossible to say which lesion has preceded the other.

The only nervous disease having an organic cause which the author has not seen counterfeited by a functional disease is contraction or spasmodic affections of the muscle. These diseases, in his experience, constitute the most difficult to explain or to treat in the whole domain of clinical medicine. In some cases he believes them to be due to chronic spinal meningitis, in others to sclerosis of the cord itself. Dr. S. W. Mitchell, in his recent work on *Injuries of Nerves and their Consequences*, has shown that in some cases sclerosis of the nerves of the affected part may also exist. A few pages are devoted to the consideration of "Vertigo and Cerebral Symptoms occurring in Deafness and other Affections of the Ear." This subject is, however, more fully discussed by Mr. James Hinton in a paper "On Labyrinthine Vertigo; sometimes called Ménière's Disease." The paper concludes with some remarks on the Uses of Galvanism.

On Sudden Death from Syncope soon after Labour; by J. J. PHILLIPS, M.D. —There is a class of cases in which sudden death occurring soon after labour is attributed by Dr. Phillips to fatty degeneration of the heart, which has been set up by the anæmia so often attendant upon pregnancy. The patients whose histories he records were multiparæ, and are described as being pale

and having the external appearances of women in feeble health. In almost every instance there was an antecedent history of breathlessness, either during gestation or labour, and whenever an opportunity of examining the heart microscopically was afforded, the muscular tissue exhibited well-marked fatty degeneration.

"This point" he says, "appears to be one deserving of special notice, and I cannot but think that it was an important factor in the production of the fatal result. I am, indeed, aware that a certain amount of fatty change in the tissue of the heart has not been here commonly noticed in cases of child-bed death; but this degeneration, even if regarded (as it has been) as simply the result of certain blood changes incident to pregnancy, must, I think, when once produced, be looked upon as having more than an accidental relation to the mode of death in these cases of fatal syncope."

The author refers to papers by De Cristoforis, Wilks, Gusserow, and Hecker, in support of his views.

In a paper *On the Dynamics of Epilepsy and Convulsions*, Mr. J. THOMPSON DICKSON advocates the view that all excito-motor affections are the resultants of two factors—the first, loss of cerebral control; the second, an excitant. Both factors, he says, are always present in convulsions, whether the convulsion be local or general, in epilepsy and eclampsia, though the second may be so far wanting as to render the chain of symptoms, as commonly described, incomplete. The cord capable of reflecting excito-motor stimuli under certain circumstances, must be considered as extending from the united thalami optici and corpora striata to the caudal extremity of the medulla spinalis. The normal influence exerted by the cortex of the brain on the excito-motor apparatus is one of control, an influence exerted more or less through the simple agency of volition or will, which presumably is capable of controlling an impulse to most involuntary movements, such normal reflex acts as deglutition and ejaculatio seminis, whose centres of action are out of connection with the cortical gray matter, being of course excepted. The occurrence of local convulsions the author explains by supposing that the power of control (by excision, tumour, abscess, or other means of destruction of tissue) is cut off from a limited area of the brain's surface.

Mr. Dickson thinks that the proximate cause of excito-motor action is to be sought for in some alteration in the circulation of the brain, but he agrees neither with Dr. Marshall Hall, in believing that this alteration depends upon an impeded flow of venous blood from the brain, nor with Mr. Solly, in considering it to be due to an active determination of blood to the head. He holds, on the contrary, that the condition really present is cerebral anæmia. In support of this view he refers us to observations, made in slaughter-houses, where animals are put to death by bleeding, the effect of which is always to produce convulsions before death. This was at first explained by the assumption that muscles contracted spasmodically when deprived of blood, but the fallacy of this opinion has been demonstrated by Kussmaul and Tenner, who have shown that deprivation of the brain of arterial blood by tying the vessels of the neck will produce all the effects as perfectly as, or more perfectly than, depletion. This conclusion has been rendered still more certain by the study of the brain by Donders's method, which consists in inserting an air-tight window into the skull and observing the brain through it. It is then found that on compression of the large arteries of the neck complete anæmia of the brain and its membranes ensues, and this continues until the convulsion begins, when the venous anæmia partially subsides, though the arterial and capillary anæmia is unaltered. Indirect evidence in favour of the same view is furnished

by the blanched anæmic appearance of the face and neck on the invasion of an epileptic attack, which must correspond with the condition within the skull. Moreover, convulsions are produced by the injection of water into the circulation.

The invasion of unconsciousness in epilepsy is always sudden, and it may be explained by supposing that under the influence of some irritant an instantaneous contraction of the smaller arterial vessels takes place. This irritant may be a tumour or an abscess seated within the cranium, or it may be contained in the blood, or may act upon the medulla spinalis from some other part of the body. The author regards the loss of consciousness which takes place in apoplexy as also caused by anæmia of the brain, the extravasated blood in this case acting as the irritant. Niemeyer has long held the view that apoplectic stupor was due to this condition, but he explains its occurrence differently.

Dr. Hughlings Jackson has recently advanced the theory that from the seat of pathological lesions discharges are sent out, which are distributed to certain muscles in the case of local affections, and to the muscles generally in the case of a general affection. Dr. Dickson maintains, on the contrary, that when control over certain muscles is lost or diminished by destruction or injury of a portion of the surface of the brain, involuntary or convulsive movements will occur in these muscles from reflex excitation. The muscles, he says, contain a power of contraction in themselves, irrespective of mandates from the cerebrum, and convulsive movements may be induced in a warm-blooded animal after the whole of the cerebrum has been sliced away.

Mr. JAMES HINTON contributes a paper *On Labyrinthine Vertigo, sometimes called Ménière's Disease*. Under the name of Ménière's disease is described a very numerous class of cases, apparently embracing several varieties, in which some of the symptoms of formidable disease of the nervous centres, especially giddiness, vomiting, and staggering, have their origin in affections of the labyrinth. In the cases comprehended under this title, the nervous symptoms do not depend upon inflammation of the tympanum or of the adjacent parts, which, it is well known, is capable of producing grave cerebral disorders, or upon the pressure caused by accumulations of cerumen or by a foreign body in the meatus which occasionally give rise to symptoms simulating those of cerebral affections. The nature of the lesion of the labyrinth in Ménière's disease is still unknown. In fact the few post-mortem examinations which have been made seem to indicate that it is not always the same. Dr. Knapp, of New York, in an exhaustive discussion,¹ has given it as his opinion that the phenomena of labyrinthine vertigo may be traced in all cases either to hemorrhage or to serous or purulent exudation within the semicircular canals. Several interesting cases of the affection will be found in this paper and others in Dr. Wilks's.

Queries in Theoretical Physiology, No. II.; by JAMES HINTON.

On the Artificial Formation of Organic Substances; by Dr. HENRY DEBES.

These papers are of more interest to the organic chemist than to the practical physician, and in view of the limited space at our command, we shall not attempt to analyze them.

A Case of Inflammation of the Aorta, causing Contraction of its Ascending Part and Fatal Ischaemia; by WALTER MOXON, M.D.—Three patches of disease of the aorta were found in this case—one situated at the origin of the vessel, another in the commencement of the descending part, and the third near the

¹ "Archives of Ophthalmology and Otology," vol. ii. No. 1, p. 204.

cœliac axis. These patches are said to have had the appearance of a circumscribed eruption, with a tendency to spread with convex edges just like a patch of lupus. The thickness of the diseased part was considerably increased, so that it was five times that of the healthy portions of the vessel, but not uniformly so. A microscopic examination showed that the cells, of which certain yellow spots in the patches were made up, were exceedingly small ($\frac{1}{5000}$ of an inch), and have some resemblance to those of tubercle. Dr. Moxon believes that the disease was originally eruptive, in the sense in which we speak of cutaneous eruptions, and from this and other cases which he has met he is emboldened to express his belief that the coats of the arteries are as liable to inflammatory eruptions as the skin to its eruptive inflammations.

In a paper *On Hospital Dietaries*, Dr. J. C. STEELE compares the diet-tables of the various hospitals in London, not only with one another, but also with those of some of the provincial hospitals. He has evidently fully investigated the merits of each, and we would commend the careful study of the article to those who may be in charge of similar institutions in this country, where we have good reason to believe the diet of the sick is not nearly so well attended to as its importance demands.

Some Cases of Hydatid Disease; by S. O. HABERSHON, M.D.—In the *Hospital Reports* for 1860, Dr. Habershon published several cases of hydatid disease. In this volume he places on record four additional instances, because, he says, they illustrate some of the difficulties in diagnosis, and because they show the importance of early and decided treatment when the nature of the malady is ascertained. In the first case the hydatid appeared to have located itself originally in the lung, where it seems to have given rise to so much irritation as to have caused hemorrhages. During one of these a portion of membrane was expectorated, in which Dr. Moxon detected the plicated foldings of a hydatid cyst. Death in this case was caused by hemorrhage from a vein which opened directly into the cavity left by the hydatid, a lesion which is very well shown in the accompanying plate. The result was more fortunate in the next instance, in which the hydatid cyst was also expectorated. The symptoms indicated that the disease was originally seated in the liver, that adhesive inflammation on both sides of the diaphragm had taken place, and that the cyst had then made its way into the lung. The diagnosis in the third case was more difficult, for even after the hydatid character of the disease was recognized, it was doubtful whether the mischief was located in the kidneys or in the spleen or in the left lobe of the liver. The tumour extended too far into the left loin and into the left hypochondriac region for it to be the left lobe of the liver, but it was more difficult to ascertain whether the kidney or the spleen was affected. The cyst was twice punctured by Mr. Bryant, who drew off on the first occasion thirty-seven ounces of a clear fluid free from albumen, in which Dr. Fagge detected the head of an echinococcus surrounded by a row of hooklets. At the second operation five pints of fluid also containing scolices were removed. A small number of hydatid cysts also came through the canula. The cyst was subsequently washed out with a dilute solution of carbolic acid (2 grains to 4 ounces). The patient finally sank from exhaustion induced by rupture of the sac into the peritoneal cavity. In the last case there was an old hydatid cyst in the liver, which induced perforation of the diaphragm and subsequent pleurisy and death.

The unfavourable termination of most of the instances recorded in this paper, induces Dr. Habershon to believe that if the diagnosis be clear it is a safer plan to withdraw the fluid early than to trust to the possible death of the hydatid and gradual wasting of the cyst, and in cases also where there is

a refilling of the cyst after tapping he regards it as the wiser plan to re-empty the cyst early than to allow suppurative changes to ensue by the indefinite postponement of a second operation.

J. H. H.

Turning our attention now to those papers which are more particularly interesting to surgeons, we meet first with Mr. J. COOPER FORSTER'S annual contribution of *Clinical Records*. In the present instalment, Mr. Forster has wisely limited his selection to the more important cases which have been under his care, giving the details of but sixty-three out of nearly four hundred. He has also much increased the value of his pages by adding a synopsis arranged as an index, by means of which reference is easily made to the somewhat miscellaneous contents of his paper. Among Mr. Forster's most interesting cases we note particularly one of innominate aneurism, unsuccessfully treated by distal pressure on the carotid—the patient dying on the sixth day from capillary cerebral hemorrhage; and one of naso-pharyngeal polypus, the removal of which was facilitated by a preliminary osteo-plastic resection of the upper jaw, the bone being displaced *outwards*, instead of inwards, as in Langenbeck's, or downwards, as in Cheever's operation. From Mr. Forster's remarks upon Prof. Lister's "antiseptic method," we select the following paragraphs, which afford what we are disposed to consider a very just estimate of this much-vaunted mode of treatment:—

"During the past year I have tried the antiseptic treatment in many cases in which I thought it could be carried out satisfactorily. . . . To insure the thorough application of this method necessitates the constant attention of the surgeon who has charge of the case, and practically, in a London Hospital, such entire supervision is a simple impossibility. The practice, therefore, becomes virtually placed in the hands of the dressers, and unless these gentlemen take a great interest in improvements, or are not too much occupied with the many cases which almost overburden them during their respective weeks of duty, it is not likely to be taken up warmly by them. Moreover, the thorough method of the application of the dressing is not acquired without considerable practice, and when acquired one's best efforts are often rendered futile by the restlessness of the patients. Hence the measure of my success during the last year has not been what I had hoped for. . . . Whether or not the absence of pyæmia and erysipelas from the wards has been due to the carbolic vapour permeating them, or to the application of the acid directly to discharging surfaces, of course I cannot speak positively, but my impression is that carbolic acid, in whatever form, has had very little to do with the results obtained, and that those curses of surgical practice (erysipelas and pyæmia) have been avoided by greater cleanliness in the wards, and the larger cubic area allowed to each patient. That this immunity cannot be owing to the antiseptic treatment must, I think, be evident from the fact that none of my surgical colleagues, who have charge of the other wards, have used this antiseptic plan, and there has been in their case an equal immunity from erysipelas and pyæmia. . . . Isolated cases of wonderful results, under antiseptic means, are to be met with now and then, but whether on account of, or notwithstanding, the treatment, appears to me to be quite impossible to determine. . . . If the remedy . . . is only available in practised hands, I cannot think it advisable to teach students that it is the one plan of treating all cases of external wounds. My results do not even bear me out in telling them that it is the most advisable treatment to be adopted; it is impossible to compare case with case. In the only very severe accident in which I tried the plan myself, taking every precaution that possibly could be adopted to insure the treatment being carried out in its entirety, I utterly failed to secure a good result."

The next paper to which we shall invite our readers' attention is *On Follicular Disease of the Scalp*; by JAMES F. GOODHART, M.B.

The author refers to papers on follicular disease, by Messrs. Cock and

Birkett, in a previous volume of the *Guy's*,¹ and by Mr. Prescott Hewett, in the *St. George's Hospital Reports*,² and then, dismissing the clinical features of the affection, gives an account of the microscopic appearances observed in two cases under the care of the late Mr. Poland, and compares them with the appearances in a third case, published by Mr. Birkett in the *Transactions of the Pathological Society of London*, and with those in a fourth, known as Chassaignac's and quoted by Mr. Hewett in the paper already referred to. While in their general characteristics the growths in these four cases presented a tolerably complete correspondence with each other, their microscopic peculiarities differed, the first (and probably the last) being of an epithelial character, the second sarcomatous, and the third resembling a gland in its cellular elements. We have not space to follow Mr. Goodhart in his interesting discussion of the different views which have prevailed as to the origin and nature of these follicular tumours or sebaceous cysts, but must content ourselves with transcribing the paragraphs in which he gives a "summary" of what has gone before:—

"There seems to be enough evidence to show, first, that follicular tumours are, in their bare anatomical details, suspicious in their tendencies, and that, inasmuch as their anatomy is an index, rough though it may be, of their life's process, that is to say, of their pathology, from the latter point of view they may still be said to have very close relations to the cancerous or malignant group.

"Secondly, abundant material is at hand to prove, as former writers on the subject have shown, that, clinically, such tumours have not the behaviour of cancers, and if removed they do not return. Pathology and surgery in its clinical aspect would seem at first sight, then, to come into collision; they do not do so in reality. The non-recurrence of the tumour only shows that the regions more especially prone to attack afford opportunities for their complete extirpation, or that allowing of growth which is malignant in its nature, the local peculiarities of the part have been in some way inimical to the extension of the disease.

"It seems almost unnecessary to add that the practice urged by Mr. Cock, in his paper on the subject, as to the advisability of the early removal of the tumour, is very strongly supported by these observations."

Mr. Goodhart's paper is illustrated with two well-executed plates.

The next surgical paper is a *Note on the Operation of Circumcision in the Adult*; by H. G. HOWSE, M.S. Mr. Howse calls attention to the fact that after the operation of circumcision, as ordinarily performed, a considerable swelling, resulting from inflammatory induration, occasionally persists at the lower part of the penis. To obviate this he says:—

"The remedy which I propose, and which I have been in the habit of using in all my circumcision cases, is the following: After removing the skin in the ordinary way, cut out the wedge-shaped piece of mucous membrane at the *frænum* with a pair of scissors, and then snip the *frænum* cleanly away from the glans, thus removing it and the wedge-shaped bit of mucous membrane in one piece together. Then unite the skin and the mucous membrane in the ordinary way, etc."

Upon which we have to remark that (1) the removal of the *frænum* with a wedge-shaped portion of the prepuce, is in effect but a revival of the old method of Taxil and Jobert (de Lamballe), and that (2) it has the disadvantage of exposing the patient to the risk of secondary hemorrhage, a complication which we have ourselves met with in a case of circumcision in which the

¹ Guy's Hosp. Reports, 2d S., vol. viii.

² St. George's Hosp. Reports, vol. iv. p. 91, and No. of this Journal for July, 1870, p. 208.

frænum was divided at rather a higher point than usual. As to the deformity, to which Mr. Howse justly objects, we believe that it is much less apt to follow the operation of *circumcision* than that of simple *division* of the prepuce on its dorsal aspect, which some surgeons, for reasons which we have never been able to understand, seem to prefer.

We come next to *A Description of the Appearances of the Human Eye in Health and Disease as seen by the Ophthalmoscope. Seventh Series. Myopia; Region of the Yellow Spot.* By C. BADER. This short paper, which is a continuation of the author's previous contributions under the same general title, is accompanied with a chromo-lithographic plate containing five figures.

The next is at once one of the longest and one of the most valuable papers in the whole volume; it forms, indeed, one of the most important contributions to the literature of its subject with which we are acquainted. At the same time, candor compels us to add that it will prove, we fear, in a great degree "caviare to the general," and that it is not most appropriately placed in a volume of hospital reports. The paper in question is by Dr. WALTER MOXON, and is *On the Pathological Nature of Tumours*. We have read the whole of Dr. Moxon's essay with much interest, and would cordially commend it to the attention of such of our readers as take pleasure in studying the obscure but important subject of morbid growths; we must content ourselves, however, in this place, with quoting the author's conclusions, which are as follows:—

"*Summary of the theory of tumours.*—In the present state of our knowledge of tumours, both benignant and malignant, it is necessary to regard the hæmal processes as subordinate to the parenchymatous processes in their production.

"The blood furnishes a plasma to the tumour, and very likely favours the development of the tumour much in the same way as starvation in a plant favours the development of the aphid. Such favouring tendency in the blood may be necessary, but is not sufficient to form a tumour.

"The power of the blood-cells to form tumours in leukæmia, etc., if proved, is only a means of secondary causation, because the blood-cells themselves are derived from the solid textures. There is no reason to believe that the 'plasma' furnished by the blood can produce cells.

"The individual cell-elements of tumours arise by multiplication of the cell-elements of the parenchyma. This multiplication of the parenchyma-cells is always constitutional, although it be localised in the part, and although it may require prolonged irritation to elicit its activity. There is also a 'higher' controlling influence to be recognised in the formation of tumours—an influence equal to that which governs the organization of the several organs of the normal anatomy. This organizing influence determines the elementary cells into various plans according to the nature of the tumour."

Dr. Moxon's essay is illustrated with well-executed wood-cuts, showing the microscopic appearances of the various forms of tumour described by modern pathologists.

The next paper to be considered is called *Notes of Abnormalities observed in the Dissecting-Room, from October, 1870, to June, 1872*; by N. DAVIES-COLLEY, M.C., F. TAYLOR, M.D., and B. N. DALTON, M.B. The amount of anatomical work done by the students of Guy's Hospital may be estimated from the statement that no less than 160 subjects were dissected from October, 1870, to June, 1872. Abnormal arrangements of muscles, arteries, nerves, etc., were observed in many instances, and the more important variations are here enumerated, and will be referred to with interest by those who are engaged in the study of anatomical science.

A Case of Progressive Caseous Disease of the Lymphatic Glands after Disease of the Knee-joint, is narrated by JAMES F. GOODHART, M.B. The chief

point of interest in this case was that in the left lung were numerous masses of cheesy material, which appeared to have been formed by extension of disease from the lymphatic glands at the root of the organ; the case, in the words of the author, "is one of the very few instances on record, in which, precisely as in the lower animals, a tuberculosis has extended from a local cause in a manner so direct that it cannot be questioned."

The next paper is *On Suppuration and Sphacelus of the Tooth-pulp*; by S. J. A. SALTER, M.B., F.R.S. Suppuration of the tooth-pulp is believed by Mr. Salter to be a much commoner occurrence than is ordinarily supposed; he has so frequently found pus in small quantities in the pulps of comparatively healthy teeth, which have given rise to very moderate symptoms, that he is convinced that suppuration often exists without being suspected, the tooth recovering from its painful condition, and subsequently remaining as a useful and apparently a sound organ. With regard to the source of the pus in these cases, he adds—

"It has appeared to me that the pus in the tooth-pulp is formed at the expense and by the multiplication of the cells (granules of Purkinje) which so largely pervade the pulp, by their direct conversion into pus-cells, just as Virchow has shown that the pus is formed in parenchymatous organs by the proliferation of the development cells of the connective tissue."

The next paper is one of much practical interest and value; it is *On some of the New Growths developed in the Breast associated with Cysts*; by JOHN BIRKETT. Nine cases are given in detail, illustrating the various forms of new growth which are met with in connection with cysts in the mammary region, and the author proposes a mode of classifying cysts of the breast, which, as it differs somewhat from the classifications commonly employed, we copy for our readers' edification.

CYSTS IN THE BREAST.	I. Associated, communicating, or connected with the ducts.	<ol style="list-style-type: none"> 1. Milk. 2. Growths; with serum coagulable, and sometimes tinged with blood. 	<ol style="list-style-type: none"> 1. Adenoid. 2. Granulation cells. 3. Cancer.
	II. Not connected with the ducts.	<ol style="list-style-type: none"> 1. Blood. 2. Milk. 3. Simple cysts. 4. Entozoon cysts. 5. Growths; with serum coagulable, tinged with blood, and containing cholesterine. 	<ol style="list-style-type: none"> Serum not coagulable. 1. Adenoid. 2. Granulation cells. 3. Cancer.

Mr. Birkett's paper is illustrated with two fine plates, each containing two figures.

The last papers in the volume are the *Statistical Accounts of the Patients treated in Guy's Hospital during 1871 and 1872*; by J. C. STEELE, M.D. These papers contain elaborate tables of diseases, injuries, operations, etc., and furnish a great deal of valuable information in a form convenient for reference. Their study forces upon us one reflection, viz., that it is a matter for regret that the large amount of practical surgery mirrored forth in these tables should be so inadequately represented in the papers contained in the body of the volume. Excellent and admirable as they may be in themselves, such papers as, for instance, Dr. Moxon's on tumours, are not what we have been in the habit of looking for in the successive volumes of *Guy's Hospital Reports*.

J. A., JR.

ART. XVI.—*Saint Thomas's Hospital Reports*. New Series. Edited by Dr. BRISTOWE, Dr. STONE, and Mr. CROFT. Vol. III. 8vo., pp. x., 381. London: J. & A. Churchill, 1873.

THIS volume of the St. Thomas's Reports attests the interest taken in the series by the Staff of the Hospital, and their desire to discharge the whole duty pertaining to their appointment. We are happy to be able to chronicle this fact, for hospital appointees too often forget that they hold their position in trust, for the education of their professional brethren and for the advancement of medical science, as well as for the cure of the sick and disabled.

The opening paper of the volume is a *Report on Cases of Rheumatic Fever treated between the spring of 1868 and the same period of 1872*, by THOMAS B. PEACOCK, M.D., Senior Physician to the Hospital. It will be remembered that in 1868 Dr. Peacock analyzed 146 cases of rheumatic fever treated by him during a series of years (see No. of this Journal for April, 1870, page 495), and since then he has had under his care 87 cases, which he analyzes in the present paper.

Dr. Peacock's cases prove the existence of a much greater tendency for the heart to be affected in the cases of rheumatism which occur in early life than in those in persons at more advanced ages. The proportion of cardiac complication does not appear to differ much according to the intensity of the disease, but there exists a very remarkable difference between the kind of cardiac complication which occurred in the two classes of cases; endocarditis being especially common in the cases of more severe disease, while pericarditis more particularly occurred in the slighter cases.

From a study of his cases Dr. Peacock finds—

"That when a case of rheumatic fever is complicated by the occurrence of simple pericarditis, the local disease will probably be recovered from without leaving behind it any obvious impairment of the condition of the heart. When, on the other hand, there is endocarditis, either alone or with pericarditis, and especially if the local disease becomes fully developed before the patient comes under treatment, there is great risk that some marked permanent defect in the heart will remain."

Of the 87 cases 1 died, and of the previously reported 146 cases 2 died, making, in the 233 cases, a mortality of 1.28 per cent. The treatment corresponded closely in the different cases.

"It consisted in the employment of bicarbonate of potash, alone or with nitrate of potash, in by far the majority of the cases. In some, and especially those of a more subacute character, iodide of potassium, bicarbonate of potash, and small doses of colchicum were used, and this was also the treatment in some cases in which subacute rheumatic affections remained after the more active symptoms had subsided. Dover's powder or opium was given when the patient was in great pain or was very restless at night, and with these remedies were occasionally combined, especially in the cases of cardiac or other complication, and when the tongue was much furred, small doses of gray powder or calomel.

"As local applications blisters were very generally placed around the limbs above the affected joints, and several of them were often applied at the same time, and they were always followed by poultices. In four cases the blisters were had recourse to without any constitutional treatment. In the cases in which cardiac complication occurred, blisters and poultices were very generally applied over the region of the heart, and in one instance leeches were used, the general treatment being otherwise the same as in other cases.

"During convalescence, quinia, bark, and iron were generally given; and

stimulants, brandy or wine, were exhibited during the progress of the cases as required."

The duration of treatment averaged twenty to twenty-two days.

In an article on the *Varieties of General Paralysis*, Dr. FREDERICK POLLARD discusses especially, 1, general paralysis of the insane; 2, general spinal paralysis, and 3, hysterical paralysis. We are happy to learn that Dr. Bristowe is preparing for these Reports a paper on Hysterical Paralysis, which, from the nature of the subject and the well-known ability of its author, cannot fail to prove interesting.

Dr. GERVIS reports a *Case of Annular Laceration of the Cervix Uteri occurring during Labour*, in which a ring of the cervix was completely separated behind and laterally, but retained its connection with the uterus in front. The almost collapsed condition of the patient did not permit of other treatment than replacing the ring as far as possible *in situ*. Seven days afterward it was apparent on examination that the ring was uniting with the cervix and had much contracted, and on the 29th day a linear depression alone remained to show where the laceration had taken place.

The points of interest in this case are, firstly, its rarity, and secondly, its successful issue. Fortunately the slight connection of the loop of cervix with the uterus proved sufficient not only to maintain its vitality, but to enable it to share in the general contraction of the uterus which followed delivery.

Tubercular Fever and its Relation to Enteric Fever is the title of an interesting paper by Dr. JOHN HARLEY. He uses the term "tubercular fever" instead of acute tuberculosis, because he considers the latter term to imply a more chronic and less febrile condition than is exemplified in his cases.

The object of the paper is to prove not only that tubercle may form an actual component of enteric fever, but that fully developed enteric fever may be solely caused by the simultaneous eruption of miliary tubercle in the intestinal glands and in the lungs. Dr. Harley denies that a specific poison is the cause of enteric fever, because he has never seen it, and that the inflammatory product is a *specific* deposit, because were it, we would then have two kinds of specific exudation deposited simultaneously, the one in the intestinal glands, the other in the lungs or any other part; which he thinks is absurd.

Dr. Harley believes that enteric fever "may arise in any simple inflammatory condition of the body (particularly pneumonia) as soon as the inflammatory action involves the glands of the ileum or colon;" that "when the ileal glands alone are affected, the distinction between tubercular and enteric fevers is absolutely *nil*."

Dr. Harley appears to consider that tuberculous disease of the intestine may manifest itself as enteric fever. Although the diagnosis at the bedside of these two diseases is sometimes obscure, yet the pathological evidence of their difference is marked. Moreover a careful observation of the temperature, which Dr. Harley seems to have omitted in his cases, serves to throw light on the diagnosis. In enteric fever the temperature is high by the end of the first week, and keeps high for an indefinite time; when it begins to decline, its diminution is regular; whereas in acute phthisis the temperature is subject to great and sudden variations, even to the extent of six or seven degrees, and bears no regular relation with the respiration or pulse.

Dr. Harley has not considered it necessary to argue the correctness of his views, and we doubt if the present paper will make any converts to his peculiar doctrines.

Cases of Dysenteric Diarrhœa is the title of a paper by EDWARD CLAPTON, M.D. The term "Dysenteric Diarrhœa" the author applies to a class of cases

which are commonly met with, in which the symptoms are of a mixed character, and the parts chiefly involved are the upper portion of the colon and (either directly or sympathetically) the lower end of the ileum, instead of the lower part of the colon and the rectum, which are said to be the principal seats of the disease in tropical regions.

Four of the cases described by Dr. Clapton were syphilitic, and in each iodide of potassium almost at once afforded relief, and this, on the continuance of the drug, proved permanent. Other treatment was of little or no avail.

Dr. G. H. EVANS contributes notes of eight cases of *Empyema*. His cases do not present any peculiarities requiring notice here.

The succeeding paper, *On some points in the Medical History of the Clergy Mutual Assurance Society*, by W. H. STONER, F.R.C.P., and STEWART HELDER, Fellow of the Institute of Actuaries, presents some statistical and medical facts concerning the early history of this flourishing society, which will prove valuable to actuaries and others interested in life insurance.

Mr. J. F. PAYNE, in reporting a *Case of Injury to the Sympathetic Nerve in the Neck*, makes an interesting contribution to the pathology of the sympathetic nerve in man.

The subject of this paper when aged fifteen months presented a marked difference between the two sides of his face. The left side was pale, the palpebral fissure was distinctly smaller, and a little sunk in the head; there appeared to be no difference in the size of the globe. The left pupil was smaller than the right, and the eye seemed insufficiently provided with moisture. Although there was an appearance of ptosis of the left upper lid, no paralysis of this or any other facial muscle could be detected. The symptoms of the right side of the face were the opposite of those presented by the left. The right eye watered, the eyelids were opened wider, and the eye was more prominent, and the pupil larger than the left. There was a constant running from the right nostril. When the child from any cause flushed, the right side of his face became red, while the left remained pale. The right side only would sweat under any circumstances, the left remaining quite dry. This abnormality and inequality of the two sides of the face, the child is said to have presented from birth. No difference could be perceived between the two sides in the development of the teeth, condition of the tongue, lips or mouth, size and general nutrition of the parts. The condition of the hair was doubtful.

It will be remembered that Dr. Ogle described to the Royal Medical and Chirurgical Society (see No. of this Journal for April, 1870, p. 477), a case somewhat similar to this. Accepting the explanation which Dr. Ogle then gave, Mr. Payne concludes that the cervical sympathetic of the left side in the present case must have received (probably, judging from the history, at birth) an injury amounting to severance; that this, in all probability, first of all produced hyperæmia, increased secretion, and contracted pupil of that side (though of that stage there is no record or evidence), and that this stage was followed by the condition which became permanent, of anæmia, deficient secretion, and contracted pupil.

In a paper *On the Existence of Continued Currents in Fluids*, Mr. GEORGE RAINEY shows the effect of alterations in temperature upon the currents which, in a previous volume of the Reports, he described as existing in fluids in a so-called state of rest.

Dr. JOHN S. BRISTOWE contributes some very interesting and instructive *Cases illustrating the relative effects of Pressure on the Trachea and Pressure on the Recurrent Laryngeal Nerve, in producing Impairment of Voice and Dyspnœa*. Impairment of voice from paralysis of one of the vocal cords and

paroxysmal attacks of dyspnœa, are often symptomatic of intra-thoracic aneurism; but, Dr. Bristowe asks, are both these symptoms the result of pressure on the recurrent laryngeal nerve? In many cases of aneurism this condition exists, and the symptoms mentioned are present; but, on the other hand, we meet with cases of laryngeal paralysis in which there is no dyspnœa, and with cases of intra-thoracic tumour in which there is no such palsy, but in which, nevertheless, paroxysmal dyspnœa forms a marked feature. For instance, Dr. Bristowe relates a case of cancer of the œsophagus, in which hoarseness of voice and paralysis of the left vocal cord were present. Death suddenly occurred from hemorrhage due to perforation of the left common carotid. At the post-mortem examination the left recurrent laryngeal was found to be entirely destroyed in a good inch of its course by the advance of the cancer. This patient had no difficulty of breathing from first to last.

In another case there was equally clear proof, post-mortem, that the patient was the subject of complete destruction of the left recurrent laryngeal, and it is certain that, during life, he suffered from those symptoms which we attribute to that lesion, viz., impairment of laryngeal voice and difficulty in deglutition of fluids, owing to a tendency to pass into the trachea; but there was not a trace of dyspnœa, either persistent or paroxysmal.

As illustrating the effects of compression of the trachea alone, Dr. Bristowe narrates the case of a middle-aged woman admitted into the hospital with feverish symptoms, the cause of which was not very apparent. After lying there for two or three days, she was attacked suddenly with intense dyspnœa, followed in a minute or two by blackness of the face and insensibility. It was obvious that the patient was dying, and that there was a moderate sized, unsymmetrical tumour in the middle line of the neck immediately above the sternum, which, by the pressure it was exerting, was the cause of her alarming condition. On examining the tumour, it was perceived that a portion, at all events, of its bulk was cystic. A fine trocar and canula were passed into the tumour, and between three and four ounces of viscid, reddish-brown fluid were removed. As the fluid escaped, the dyspnœa diminished, her livid tint faded away, her pulse became slower, her eyes opened, and within a minute or two she appeared to be entirely restored to life and health. The patient suffered from a sub-sternal bronchocele; bronchocele, that is to say, with extension of the tumour behind the sternum, and between that bone and the trachea, a form of the disease which is always extremely dangerous from its liability to compress the trachea from before backwards, and thus to cause paroxysmal and ultimately fatal dyspnœa. There are no reasons here, nor is there generally any reason in such cases, to suspect any implication of the recurrent laryngeal.

Another patient of Dr. Bristowe died recently in the hospital from aortic aneurism. The local indications of the aneurism were obvious. He suffered from dyspnœa, liable to sudden terrible exacerbations. His respirations and cough were markedly stridulous. But there was never any indication of palsy of the vocal cord, nor any tendency for food to pass the wrong way; and his voice maintained its normal intonation. At the post-mortem the recurrent laryngeals were found unaffected.

These cases show, in the first place, that destruction of the functional activity of one recurrent laryngeal nerve is marked by paralysis of the corresponding vocal cord, which can be recognized by means of the laryngoscope, by impairment of the musical quality of the voice, and (probably) by some difficulty of swallowing, owing to the tendency of food to slip into the larynx; but is not necessarily attended with stridor or dyspnœa; and in the second place, that

compression of the trachea involves stridor and difficulty of breathing, which is often paroxysmal and liable to end in sudden death, but that it does not of itself interfere with perfect intonation, excepting only in so far as it may render the voice weak by diminishing the supply of wind to the vocal organ.

The exacerbations of dyspnœa occurring in narrowing of the trachea Dr. Bristowe thinks may be due to actual accumulation of mucus in or below the affected part, and to the difficulty of dislodging that mucus in consequence of the mechanical impediment existing there to the performance of an effective cough.

Tracheotomy, Dr. Bristowe, of course, thinks is useless in those cases, as the obstruction is not at the laryngeal orifice, but in the trachea at a point below the lowest possible point of operation.

In explanation of this valuable practical paper, Dr. Morell Mackenzie states (*London Med. Record*, April 9, 1873) that when the recurrent nerve is pressed upon, the vocal cord of the affected side does not remain in an intermediate position between extreme abduction and extreme adduction, but is always seen quite near the median line. Hence in these cases the arc of the laryngeal canal is always diminished. There is always, therefore, slight dyspnœa. This may not be apparent when the patient is perfectly quiet; but if the respiration be at all hurried or forced, slight stridor is almost invariably perceptible. There is also, generally, slight stridor in deep sleep. Nevertheless, it is perfectly true that severe dyspnœa of a paroxysmal character does not occur, when, owing to paralysis of the muscles, the vocal cord is in the position described.

Dr. Mackenzie moreover states that Dr. Bristowe's important deductions are strongly confirmed by the observation of cases of bilateral paralysis of the abductors of the vocal cords from pressure on both recurrences; though there is constant dyspnœa in these cases, there are no attacks of suffocation of a sudden and severe character. In addition to the causes referred to by Dr. Bristowe, as giving rise to the exacerbations, Dr. Mackenzie thinks it probable that, in the case of aneurismal tumours, the paroxysms of suffocation are sometimes brought on by a sudden increase in the volume of the sac.

The next paper, also by Dr. Bristowe, is *An Attempt to Explain the Cause of the Formation of the Spiral Fibre in Vegetable Cells and Vessels*.

Mr. W. M. ORD follows in a very interesting and well written article *On the Relation of Gout to Uric Acid*, which he sums up as follows:—

“1. Gout is a mode of decay of the whole system, marked by the deposit of urate of soda in and about joints, and by local inflammation of a particular kind.

“2. The deposit of the urate is a result of local or general disintegration, and is not to be regarded as a means of eliminating urate from the blood.

“3. The local inflammations do not necessarily depend upon the deposit of urate, and the deposit is not a consequence of inflammation; at the same time it is probable that excess of urate in the blood produces irritation of tissues.

“4. The local inflammation is peculiar in respect of the ease with which it is produced, of the pain by which it is attended, and of the products, which are chemical rather than structural; chemical substance of low molecule, tending to crystallize or to be dissolved, being formed in the part, instead of substances of high molecule tending to be organized. Interstitial subcrystalline deposit is common, suppuration rare, in gout.

“5. The local inflammations are set going by local exciting causes.

“6. The local degenerations and inflammations tend to infect the rest of the system through the blood, and to set up similar actions elsewhere through reflex nervous action.”

The volume concludes with the *Report of the Obstetrical Department*, by HENRY GERVIS, M.D., and the *Medical Reports*, by S. E. SOLLY, F.R.C.S.

I. M. H.

Of the *Surgical* papers, the first is an interesting article *On Subastragaloid Dislocation of the Foot*; by WILLIAM MAC CORMAC, F.R.C.S. The author refers to the confusion which prevails among surgical writers, as to the nomenclature of the various dislocations met with in the neighbourhood of the ankle-joint, and expresses his preference for such a classification as Broca's; in fact, as pointed out by Mr. Mac Cormac, there are three distinct forms of displacement which occur in this region, and which should receive distinct names. Thus there may be a dislocation of the entire foot at the tibio-tarsal joint—properly called a dislocation of the foot or ankle; the astragalus may remain in place, while the rest of the foot is displaced backward or to either side—sub-astragaloid dislocation; or the astragalus itself may be separated from all its connections, in which case alone can there properly be said to be a dislocation of this bone. The sub-astragaloid luxation is believed by Mr. Mac Cormac to be more common than is often supposed, and he gives in the paper now under consideration details of four cases which have occurred under his own observation, and shows that several cases which have been described by Cooper, Chassaignac, and others, as dislocations of the astragalus, were really examples of the form of injury in question. With regard to *treatment*, Mr. Mac Cormac judiciously advises that, if reduction be found impracticable even with the aid of tenotomy, the surgeon should temporize, reserving excision of the astragalus as a secondary operation should it be found necessary.

We have next to consider a short paper by Mr. FRANCIS MASON, F.R.C.S., *On the Treatment of Cicatrices after Burns*. The operation recommended and practised by Mr. Mason is analogous to Dieffenbach's ingenious mode of closing fistulæ in the penile portion of the male urethra. The cicatrix of the burn is first cut across from side to side, the incision extending in both directions into healthy skin, and the two halves of the scar are then thoroughly separated from the subjacent textures and allowed to retract, thus leaving a raw surface between their extremities. To cover this surface bridge-like flaps are now dissected up on either side, as in Dieffenbach's operation, and brought together in the median line with wire sutures, while the size of the remaining wounds is as much as possible diminished by the introduction of hare-lip pins. This operation has been practised by Mr. Mason in three cases—the offending cicatrices in two instances being in the neck, and in one at the bend of the elbow. While we have no doubt that Mr. M. honestly believes that this operation is original with himself, candour compels us to say that it is almost identical with that long since practised by the late Prof. Mütter, of this city, and by him described and illustrated with a wood-cut in the number of this Journal for July, 1842, page 78.

The next paper which demands our attention is a continuation of one in the first volume of the Reports,¹ and is *On Temperature in Surgical Cases*; by W. W. WAGSTAFFE, F.R.C.S. In his present communication Mr. Wagstaffe considers the temperature in *pyæmia*; the first rigor is accompanied by a sudden rise in temperature of from 2° to 6° F., the point reached by the thermometer during the first chill being nearly as high as that reached at any subsequent period, though the increase is less, for the reason that between the rigors the temperature often falls considerably below the normal standard.

¹ See No. of this Journal for April, 1871, p. 529.

The variations in temperature are not only very great in pyæmia, sometimes ranging over 10° or 11° F., but they occur with great irregularity; and this circumstance has in Mr. Wagstaffe's opinion a certain diagnostic value. As regards prognosis it can only be said that an unusually great depression of temperature often precedes death, and that a very high temperature, and increased frequency or increased extent of variations, are unfavourable signs. Mr. Wagstaffe's paper contains a table of twenty cases.

We have next to consider a communication from F. CHURCHILL, M.B., F.R.C.S., *On some of the Complications of Strangulated Hernia and their Diagnosis*. This is a paper of some practical interest, and gives details of several cases in which the symptoms were well adapted to cause uncertainty as to whether the surgeon had or had not to deal with a hernia in a state of strangulation. In one case, in which an inguino-scrotal hernia was known to have existed for many years, an exploratory operation showed that those symptoms which gave rise to the suspicion that strangulation had occurred, were really due to the formation of an abscess in the sheath of the spermatic cord; in another instance there was actually a strangulated hernia on one side, and a spermatocele on the other; in another case an abscess of the kidney and perityphlitis complicated an irreducible hernia, which however was not strangulated; while in a fourth case the sac of an old umbilical hernia was itself the seat of suppuration.

Mr. R. LIEBREICH, M.R.C.S., contributes a paper *On the Use and Abuse of Atropine*, (1) in iritis, (2) in keratitis, (3) in operations, (4) in injuries, and (5) as an aid to diagnosis. In *iritis*, Mr. Liebreich recommends the use of a four-grain solution of atropia, one or two drops being instilled at intervals of five minutes until complete dilatation of the pupil has been effected, and this dilatation being subsequently maintained by the employment of one or more instillations daily as long as may be required. The difficulties met with in using atropia in cases of iritis, are (1) too great intensity of the inflammatory process—to be remedied by the application of dry warmth, and, if necessary, by bleeding and the use of derivatives; (2) the presence of copious exudations in the anterior chamber—requiring the performance of a preliminary paracentesis; (3) the existence of completely organized adhesions—in which case constitutional treatment may often advantageously precede the use of the mydriatic; (4) symptoms of atropia poisoning, from a minute quantity of the drug entering the lachrymal ducts and thence reaching the nose and throat; (5) excessive sensibility of the palpebral skin and mucous membrane. To prevent the occurrence of atropia poisoning the lower lid may be slightly drawn down so as to evert the punctum lacrymale, during the instillation, or the throat may be simply rinsed out after the application is completed. For exceptional cases Mr. Liebreich employs a little instrument somewhat like a serrefine, to pinch up a fold of the lid, and thus evert the punctum. Should the use of atropia cause acute inflammation of the lids and conjunctiva—of which rare accident we have ourselves seen one well-marked example—the mydriatic should be abandoned, and a lotion of nitrate of silver substituted until the inflammation has subsided.

In the superficial forms of *keratitis*, Mr. Liebreich stops the application of atropia as soon as a single instillation produces an effect for twenty-four hours, then proceeding to use nitrate of silver; but in parenchymatous keratitis he continues the employment of the mydriatic for some time after the cessation of the deep irritation. In his remarks on the use of atropia as an aid to *diagnosis*, Mr. Liebreich expatiates upon the disadvantage of having the central hole of the ophthalmoscopic mirror either too large or too small, and adds:—

"I therefore propose to make the hole not smaller than two millimètres and the mirror not smaller than three centimètres, and to use in preference a thin silvered glass mirror, the centre of which is not perforated, but only deprived of the silver covering. The focus of the mirror may be eight or ten inches."

The next paper for our consideration is called *Statistics of Two Thousand Four Hundred and One Cases of Hernia*; by JOHN CROFT, F.R.C.S. Mr. Croft's figures, derived from his records of the National Truss Society, agree in most particulars with those obtained by Mr. Kingdon from the Reports of the City of London Truss Society. Mr. Croft's 2401 cases were observed in the course of seven years, and of the whole number of patients (none being counted twice) 1990 were males and 411 females—a proportion of nearly five to one. Mr. Kingdon's statistics likewise give a proportion of five males to one female, but Cloquet's estimate, derived from 457 dissections of hernia, gives a proportion of only two to one, while the herniotomy records of several London hospitals examined by Mr. Croft, tend to show that strangulation occurs almost as often in women as in men. "The truth," adds Mr. C., "may lie between the two sets of proportions, . . . that is 3.033 to 1."

As regards *age*, 1355 of the 2401 patients were under, and 1046 over, thirty-five years of age, but by comparing these figures with those of the *total population* of London at each age, it is found that hernia is proportionally more frequent after than before middle age. The first quinquennium of life is, however, that in which hernia is most apt to occur, no less than 472 of Mr. Croft's cases having been in children under five years of age.

As is well known, *inguinal* is the most common form of hernia; of Mr. Croft's 2401 cases, 2066 were of this kind of rupture. Of the 2066 patients 1907 were males and only 159 females, while there were 189 females and only 40 males affected with *femoral* hernia. *Umbilical* rupture was observed in 42 males and in 62 females.

The last surgical paper calling for special comment is by Mr. SYDNEY JONES, F.R.C.S., M.B., and is called a *Contribution towards the Surgical Treatment of Diseased Joints*. This paper may be considered a sequel to others published by the author in previous volumes of the Reports,¹ and, like its predecessors, is adorned with lithographic plates—six in number in this instance, and containing twelve figures. In his present communication Mr. Jones gives the details of thirteen cases of excision, eleven of the knee, and one each of the ankle and wrist. He has not deviated as yet from the operative procedure employed in his other cases of knee excision, viz., by means of an oval flap taken from the front of the joint. But—

"At the same time he has a strong desire to adopt two lateral incisions, if a thorough performance of the operation by this mode could be matured. He has tried this plan on the dead subject, and finds it easy of performance; and his friend, Mr. Treves of Margate, has carried it out on the living, making use of a chain saw to resect the bones. On the dead subject the author has found it not difficult to pass close behind the bones a narrow blade of Butcher's saw; this can be afterwards fixed, and resection done from behind forwards."

For our own part we are so well satisfied with the simple transverse incision, originally suggested by Park, and more recently practised by Textor, Kempe, and Fergusson—and which we consider infinitely preferable to the anterior oval flap commonly employed by British surgeons—that we have no desire to substitute any other mode of operating; a transverse cicatrix, though doubtless objectionable in the case of the elbow where a movable joint is hoped for, is perfectly harmless in the case of the knee, where the surgeon endeavours to

¹ See Nos. of this Journal for April, 1871, p. 528, and Oct. 1872, p. 495.

obtain complete bony ankylosis. In speaking of the constitutional treatment when profuse suppuration occurs after excision, Mr. Jones makes a practical observation which is entirely conformable to our own experience:—

“In not a few cases,” he says, “the author has found diarrhœa supervene in this suppurative stage, no doubt from systemic poisoning; this not to be remedied by astringents, but by quinine in large doses. It would not be desirable to arrest suddenly this elimination of poisonous material.”

Mr. Jones has now done altogether thirty-two knee-joint excisions; recovery has followed in twenty-one instances, and death in five, while five cases are still under observation, and in one subsequent amputation was found necessary. The mortality of his terminated cases has been therefore 18.5 per cent., a proportion considerably less than that given by Penières for all ages.

The *Surgical Report*, for 1871, is contributed by W. ANDERSON, F.R.C.S., and contains sub-tables of surgical operations, and of cases of strangulated hernia, erysipelas, pyæmia, tetanus, reactionary and secondary hemorrhage, etc. It conveys, as usual, a great deal of practical information in a very condensed form.

The “new series” of St. Thomas’s Hospital Reports, which now bids fair to be permanently successful, already takes rank with those which have been longer established, as a series of great value and deep professional interest.

J. A., JR.

ART. XVII.—*The Liverpool and Manchester Medical and Surgical Reports*, 1873. Edited by S. MESSENGER BRADLEY, F.R.C.S., P. M. BRAIDWOOD, M.D., REGINALD HARRISON, F.R.C.S., WALTER WHITEHEAD, F.R.C.S.E. 8vo. pp. xviii. 216. Manchester: J. E. Cornish, 1873.

THE present volume is an amalgamation of the Liverpool and the Manchester Reports, and we regret to find that it affords no evidence of increased literary strength from this union.

According to our custom we shall first notice the medical papers of the volume, and afterwards those specially pertaining to surgery.

The first article is *On Climate and its Influences*; by THOMAS INMAN, M.D., and is a cursory, yet pleasantly written notice of the various places on the south coast of France and west coast of Italy, which are usually resorted to by convalescents.

Dr. WILLIAM ROBERTS offers some *Clinical Remarks on Hydatid Cysts*, based on the examination of six cases. He finds that the fluid of hydatid cysts varies in character according as the cyst contains living or dead echinococci. If the echinococci be living, the fluid is limpid, colourless, or faintly opalescent, with small white granules (broods of scolices or echinococci heads) floating in it, and may be slightly albuminous. When the parasite dies, the fluid rapidly changes; it becomes largely albuminous, and afterwards loses its transparency and becomes thick, white, and opaque, so as to resemble pus in its naked eye characters.

In a case of hydatid of the liver, Dr. Roberts used large doses of iodide of potassium, as much as thirty grains three times a day, with the result, apparently, of destroying the parasite. The tumour had been steadily growing up to the moment when the patient began to take the iodide, and even for ten days after; then diminution and retrogression commenced, and went on progressively,

though very slowly, until the cyst had entirely disappeared. This result certainly demands the trial of the drug in similar cases.

Mr. WILLIAM CARTER contributes *Notes of Cases*. The first is on the good effects obtained in a case of local paralysis, by the hypodermic use of a concentrated solution of strychnia. The largest amount injected at any one time was three twenty-fifths of a grain. When a concentrated solution is hypodermically injected, the effects are believed to be more local than when it is more diluted, and consequently, what would at first sight appear to be dangerous doses, may be thus administered without the system generally being injuriously affected.

Following the above are notes of a case of paralysis of the expiratory muscles from the pressure of ascitic fluid, in which the induced current was applied over the abdominal walls and lower intercostal muscles, with marked benefit. Some observations are also given on the use of digested milk in cases of great irritability of the stomach; on the tincture of veratrum viride in acute rheumatism; and on a case of hernia into the pericardium.

Dr. HENRY BARNES is the author of a very interesting article *On Eclampsia Nutans*—a peculiar convulsive disorder occurring in children, and characterized by paroxysms of rapid and involuntary bowing or nodding of the head. This disease is of very rare occurrence and does not appear to have attracted the attention of physicians until about thirty years ago. The first case believed to be recorded is one by Mr. West, of Tunbridge Wells, England, who in the *Lancet* for February 13, 1841, gives a description of the disease as he observed it in his own son (see *American Journal of Medical Science* July, 1841, page 187).

Dr. Barnes has been able to find the record of but eight cases, and from a careful study of these, together with a case which recently occurred in his practice, he inclines to the belief that the disease is closely allied to epilepsy, an opinion which is confirmed by the efficacy of bromide of potassium in Dr. Barnes's case, and by the fact that it, like epilepsy, leads to impairment of the intellect. The convulsive paroxysms vary in frequency from one to fifteen in the twenty-four hours, and, in severity, lasting for a few seconds or a few minutes. Usually, at the commencement of the attack, the movements are slow and more like ordinary salutations, hence the name *salaam convulsions* once given to it; but as the disease progresses they become frightfully rapid, and when severe often cause fatal exhaustion. The earliest age at which the disease has been noticed is four months, and the oldest case recorded was six years. The worst attacks come on after sleep; but even in these consciousness is not lost, but the child seems bewildered and frightened. Children of both sexes are equally liable to the disease, and it appears to be independent of dentition. This affection may come on suddenly without premonitory symptoms; in other cases, headache, drowsiness, a heavy and peculiar look about the eyes, and strabismus have been observed. After it has lasted for some time, the general health usually becomes affected, and there is great debility. In bad cases other convulsive movements become added, such as bending forward of the body, convulsive jerkings of the arms and legs, and frequently the muscles of the face become affected, especially the orbicularis palpebrarum. Occasionally general convulsions intervene, and then great impairment of the mind or complete idiocy usually terminates the case.

As none of the cases died during the progress of the disease, nothing is known of its morbid anatomy. The treatment used has been various and unsatisfactory, but the result obtained in Dr. Barnes's case points to the efficacy of bromide of potassium.

Mr. FRANCIS VACHER, of Birkenhead, offers some *Remarks on a New Midwifery Forceps*.

Dr. RICHARD CATON contributes *Notes on the Use of some of the Newer Therapeutic Agents in the Diseases of Children*. Dr. Caton has found pepsin of great value in that form of dyspepsia of infants in which milk is not digested. The second drug particularly experimented with is the tribasic phosphate of soda of the British Pharmacopœia. When the symptoms termed "bilious" are present, in jaundice, in those states of the system where it is obvious that neither assimilation nor the excretion of waste material is being performed properly, Dr. Caton has found great advantage from the use of the phosphate of soda. Chlorate of potash he has found serviceable in stomatitis, aphthous conditions of the mouth and throat, and ulceration of the tonsils. Sulphurous acid in the form of spray he has used in several cases of diphtheria, with apparent advantage.

In the numerous cases in which cow's milk is vomited by infants, after much pain and distress, in the form of hard curds of the size of a finger, Dr. Caton has derived great advantage from following Prof. Vogel's recommendation that two or three grains of the carbonate of soda be added to each bottle of milk. By thus making the milk slightly more alkaline, the sodium-albumen or casein forms a loose and easily digested coagulum, like that of human milk.

On Certain Forms of Visceral Neuralgia is the title of an article by Dr. CLIFFORD ALLBUTT, of Leeds. It appears that the author is more fortunate than most of his brethren in finding neuralgia "to be one of those [diseases] most amenable to palliative and curative interference." "Subsidiary remedies apart," he says, "it would be hard to find better antidotes against any human suffering than we have against nerve pain in quinia, in iron, in arsenic, in the hypodermic use of morphia, in the continuous battery current, in change of climate, and in a well-ordered diet."

In the present paper Dr. Allbutt writes especially of gastralgia and ovalgia. In the treatment of the former he recommends that the diet should be liberal and taken in small quantities at frequent intervals. All causes of "wear" must be removed and where anæmia exists, iron and aloes should be given, and quinia and strychnia in small doses makes a "capital chronic medicine for gastralgia." But of all the remedies "arsenic is king." Dr. Allbutt always prescribes Fowler's solution in any simple water, a dose of which, containing three to five drops of the solution, is taken largely diluted thrice daily with meals, and should be carefully pushed to the edge of its physiological effects. The only palliative remedy of any importance is morphia used hypodermically and ether and chloroform given internally in small doses.

In iron and arsenic, as chronic remedies, and in quinia or hypodermics of morphia, as immediate remedies, Dr. Allbutt says we may find a tolerably sure cure for neuralgia.

In the succeeding article *On Cephalotripsy*, Dr. J. WALLACE states that he feels sure that this operation, skilfully performed at the proper stage of labour, will very considerably reduce the maternal mortality, not only because of its superiority over the older operations, but, also perhaps, for the same reasons that craniotomy and the crotchet in the hands of some accoucheurs are very much less fatal than in the hands of others.

In an article on *Induction of Premature Labour*, Mr. WALTER WHITEHEAD attributes almost all the failures which have attended Barnes's method to the bougie escaping from the uterus before it has fulfilled its object. To obviate this Mr. Whitehead attaches the bougie to an air pessary with the hope of ful-

filling two objects, 1, to keep the bougie in the uterus; 2, to dilate the vagina and thus facilitate the ulterior stages of labour by acting as an additional excitant; and, moreover, expanding the channel through which the head is to pass. Mr. Whitehead has tried this plan in six cases, and found it safe and efficient.

Mr. J. CAMPBELL BROWN writes *On Butter* and the mode of analyzing it. A subject which may be interesting to a number of medical readers, but in a volume of hospital reports, is certainly out of place. I. M. H.

The first surgical paper we notice is one by Mr. THOMAS WINDSOR, *On the Use of Atropine in the Treatment of Short Sight*. Mr. Windsor's attention was first directed to the subject by the writings of Professor Schiess, some of whose statistics and conclusions are given. We are told, what has long been known to oculists, that most myopic eyes are diseased, which is in direct opposition to the wide-spread general opinion that near-sighted eyes are especially good to last—an opinion which the observations of ophthalmologists should entirely dissipate. Myopic elongation of the globe is very often preceded, in the experience of Messrs. Windsor and Schiess, by spasm of the ciliary muscle, which they have found can be overcome by the methodical continued use of atropia, and the elongation of the eyeball, due to strained accommodation, can thus be prevented. The conclusions arrived at are: "1. Slight myopia may be entirely due to spasm of the ciliary muscle. 2. Many cases, in which the eye is elongated, are accompanied and made worse by spasm of this muscle. 3. After some time spasm is replaced by elongation. 4. Spasm of the ciliary muscle may be removed by the methodical use of atropia. 5. Myopia may be cured in some, and its increase prevented in other cases by this treatment."

As an appendix to his paper in the previous volume of the Manchester Reports on *The Urethral Douche*, Mr. WINDSOR refers to the authors who have preceded him in writing upon the same subject, namely, M. Reliquet, Dr. A. Hewson, and Mr. A. E. Durham, giving to them a full meed of credit for their investigations, though he still thinks that his own plan of applying the principle is the best. The addendum is a graceful one, and was needed. Mr. W. is both a forcible and pleasing writer, and we should gladly see longer contributions from his pen.

Mr. JAMES TAYLOR, Surgeon to the Chester General Infirmary, contributes *A Method of Treating Wounds, with Cases*, said method consisting in leaving them to the unaided powers of nature, as was long ago advocated by Mr. Teale, of Leeds. The results reached by Mr. Taylor appear to have been such as would be looked for by any well educated surgeon, who is in the habit of placing dressings upon recent wounds for the protection they afford and who expects that they will be curative only in so far as they allow nature to act unimpeded.

Mr. W. MACFIE CAMPBELL narrates the results of the *Treatment of Amputations by Cotton-Wool* in the Northern Hospital. The method of M. Guérin was somewhat modified, the wounds being brought together by sutures and covered with a carbolized dressing before their envelopment in the wool. Our own limited experience with this dressing leads us to endorse Mr. Campbell's statement that it is exceedingly important that *all* bleeding should be stopped, and the wound allowed to glaze, before it is done up in the wool, as, in those cases where no oozing took place the results were favourable, but where the discharge was sufficient to soak through the dressing and make its speedy removal necessary no advantage appeared to attend its use.

The next article is styled *A Case of Rare Vaginal Abnormality* (!), by RODERICK MACLAREN, M.D., Surgeon to the Carlisle Dispensary. *The abnormality* was a

longitudinal septum extending from a short distance behind the hymen to the os uteri, to one lip of which it was attached, so that on one side there existed a narrow vagina which communicated with the uterus, while on the other was a canal terminating in a cul de sac. As the presence of this septum appeared to cause inconvenience and would only admit of the introduction of two fingers into the vagina at once, it was removed by scissors, and by keeping the parts distended with a tampon, a vagina sufficiently capacious to suit the ideas of the patient and her surgeon was easily obtained. There was no evidence of a divided uterus.

The next surgical paper is *On the Extirpation of Enlarged Lymphatic Glands*, by RUSHTON PARKER, F.R.C.S., who advocates the removal of scrofulous glands early, before softening has occurred, because the treatment is the shortest, it is certain to get rid of the manifestations of the disease, and the resulting cicatrix need be simply linear, which is greatly preferable to a puckered scar. These conclusions are based upon twenty-six operations on sixteen patients. Of the latter, seven were well in two weeks; four in three weeks; two in four weeks; one in five weeks; one in ten weeks, while one had not recovered in six months. In view of the often long persistence of these cases, the results obtained are gratifying and such as should induce us to give the claims of the proceeding due consideration; especially is this so when we know that the operation is endorsed and practised by so eminent a pathologist as Billroth. The operation is best restricted to those cases where the gland has been long enlarged without change of consistence, and where the tissural connections are free.

Dr. WILLIAM ROBERTS treats in the next article of *Exploring and Tapping* by means of a modified hypodermic syringe. Various sized canulas are used, and should the evacuation go on slowly we are advised to attach an India-rubber tube, filled with water, to the base of the canula and allow the accumulation to be emptied by the siphon while the patient lies comfortably in bed. Dr. Roberts has also found that small portions of semisolid tumours can be coaxed through the canula into the barrel of the syringe by pumping, and thus made available for microscopic inspection; we would only say in passing that semisolid tumours are very apt to be excited into much increased activity by any method of exploration. Illustrations of the instruments are given.

Notes on Syphilis, by S. M. BRADLEY, F.R.C.S., are continued from the second volume of the Manchester Reports, and two cases are reported in which very mild secondary symptoms followed sores which were unaccompanied with induration or multiple adenopathy. From this text is argued the unity of the syphilitic poison, which it is thought important to establish as a step towards proving that syphilis may be converted into struma, cancer, etc. A little further on is recorded a case of bubon d'emblée, or rather a case in which the initial lesion in a woman was not discovered. By reasoning, which we confess to be beyond our powers, Mr. Bradley argues that, admitting the fact of bubon d'emblée, which he takes it for granted has been established by his case just cited, we must admit the unity of syphilis. Why? Because "if it is possible to infect the system with syphilis through an unbroken cuticle, it must be possible to infect the system through *any* kind of local sore," the conclusion is certainly true, *provided* true syphilitic virus is brought into contact with the sore, nor did we know that any one denied the fact, but Mr. B.'s forte appears to lie in setting up lay figures which he batters like a veritable Quixote.

Mr. GEORGE SOUTHAM, Surgeon to the Manchester Royal Infirmary, narrates an instance of *Dislocation of the Patella on its Edge* produced in the person of

a man of twenty, by wrestling. The luxation was reduced by bending the rigid limb, after the administration of chloroform; but it was found necessary to apply an elastic knee-cap for some time afterwards to counteract the relaxation of the ligaments. Reference is made to the literature of this rare form of accident and the article though short is one of interest.

Next in order is a case of *Ligature of Subclavian Artery for Axillary Aneurism*, by J. W. STOCKS of the Salford Hospital. After the failure of prolonged attempts to effect a cure by pressure, the vessel was ligated in its third part by a carbolized catgut ligature and dressed antiseptically. The patient died on the twelfth day from asthenia with some solidification of one lung though the pleura was uninjured by the operation. The point of special interest, in the case is the fact that though the artery was closely constricted above the aneurism and filled with a fibrinous plug, the ligature itself had disappeared entirely, thus furnishing another instance in proof of the value of carbolized catgut.

JAMES ROSS, M.D., writes upon *The Origin of Cancer*, taking it for granted that there always exists an hereditary predisposition and that it springs neither from contagion nor inoculation. Dr. Ross states that his object is "to show that cancer may have been developed from innocent epithelial growths, by continued irritation acting upon these growths as they appear in a succession of individuals, and causing them to deviate further and further from healthy tissues." This semi-Darwinian position is supported by specious reasoning, which, however, does not admit of abbreviation.

MR. DAVID J. HAMILTON, of the Northern Hospital, Liverpool, gives some lucid directions for the application of *Some of the More Recent Methods of Treating Wounds on Antiseptic Principles*, founded upon the observation of more than three thousand cases. An ardent admirer of the system, he thinks the field of operative surgery has been enlarged by its introduction, and that with its skilful and universal application pyæmia and erysipelas will become things of the past. We are warned against allowing the stronger solutions of the acid to touch the raw surfaces, lest we destroy not only the poisonous atmospheric germs, but the vitality of the normal plasma itself. The whole system may be condensed into a few sentences; close the wound after washing it with a weak solution; protect it from direct contact with the acid which should be placed outside the protective so that an atmosphere of carbolic acid will surround the part, and germs of disease must first pass through it before they can reach the wound; all the dressing must be done under a carbolized spray from some form of atomizer. As will be seen the system(!) is based upon the supposition that man is only defiled from without, never from that which is within.

We notice next an interesting case by Mr. EDWARD LUND, Surgeon to the Manchester Royal Infirmary, where *A Knife was Swallowed and Passed through the Abdominal Walls* nine weeks afterwards. A female twenty-six years old, during an attack of delirium tremens, swallowed a dessert knife, the metal part of which measured six inches and a half. Eight weeks later a globular swelling made its appearance in the right side nearly on a level with the umbilicus, and the sharp edge of a foreign body could be felt distending the skin, which was freely movable over the tumour. After some days the blade of the knife protruded through the skin, and was easily removed by slight traction without additional incision. The ivory handle had been entirely digested and the extremity of the blade was rendered very thin by the action of the gastric juice. The nervous shock was considerable at the time of the removal of the offending body, but a good recovery was made without the formation of a gastric fistula.

The next paper by E. R. BICKERSTETH, Surgeon to the Liverpool Royal Infirmary, is also one of very great interest, being the history of a case of *Gluteal Aneurism*, which occurred in the person of a seaman who had three years previously, in Japan, fallen upon a sheath knife. Severe bleeding had occurred at the time of the accident, but the small wound being closed with sutures rapidly healed, and an extensive aneurism resulted. Three weeks before his arrival at Liverpool from Rotterdam the old cicatrix burst, and a quart of blood was lost; but the wound again healed. When seen by Mr. Bickersteth a pulsating tumour, the size of a child's head, existed in the right buttock, and there was no doubt about the diagnosis. Relying upon the aortic tourniquet to control the hemorrhage, on the 21st of March, Mr. B. made an incision into the sac nine inches long, from the anterior crest of the ilium to the tuberosity of the ischium, and, having turned out the clots, found the gluteal artery cut across at its point of emergence from the pelvis. With some difficulty carbolized catgut ligatures were applied to both ends of the vessel, and the large wound was brought together with many points of suture. On the 22d day of April, the patient left the hospital well, to return to his duties. We congratulate Mr. Bickersteth on this exceedingly happy termination to so serious a case, and think with him that the aortic compressor affords a very valuable aid, which those who meet with similar cases will do well to avail themselves of.

We deem it our duty in this connection to refer to the case published in the eighth volume of *Saint Bartholomew's Hospital Reports* (see preceding number of this Journal, p. 195), by Mr. Holden, where fatal secondary hemorrhage followed the ligation of the femoral artery by a carbolized catgut ligature, after extensive suppuration in the wound which was treated on antiseptic principles.

In some *Remarks upon the Shape of English Skulls*, Mr. BRADLEY tells us that his observation of European skulls has abundantly confirmed the view of Prof. Owen advanced some years since, that the marked uniformity evident in West African skulls can be fairly considered to depend upon the uniformity of pursuits in that locality; but Mr. Bradley concludes that the effects of civilization are evident even in the most debased and vicious portions of the community, for the heads of sixty-six prisoners in the Manchester gaol, examined by him, presented very marked variations.

Mr. GEORGE E. WALKER, Surgeon to St. Paul's Hospital, Liverpool, follows with *Cases of Night Blindness and detached Retina*, two of each kind being narrated. Arguing from the fact demonstrated by Dr. Brown-Séquard some years ago, that strychnia dilates the capillaries of the spinal cord, Mr. Walker thought that the same effect might be produced in the eye ground when the circulation is known to be sluggish, and accordingly tried the remedy both by the mouth and dropped into the conjunctival sac, as he thinks, with some benefit, though to us the results obtained seem somewhat indefinite.

D. LLOYD ROBERTS, M.D., F.R.C.P. (Lond.), records *A Case of Cyst removed by Abdominal Section*, which had no connection with either the uterus or ovaries. It was covered with peritoneum, being bound down by it posteriorly; there was no pedicle, but an abundant vascular supply was derived directly from the investing serous membrane. Catgut ligatures were applied to the divided vessels, and the patient made a good recovery. The cyst was filled with a clear colourless fluid, feebly albuminous, with a specific gravity of 1004. The tumour weighed $17\frac{3}{4}$ pounds, and was regarded by Dr. Roberts as a non fecundated ovule which had escaped into the abdominal cavity.

Another paper entitled, *Case of a Foreign Body in the Bladder with Stricture of the Urethra*, by Mr. LUND, concludes the surgical essays. An engineer

aged thirty-three, had suffered from stricture for thirteen years, and for the last four had been in the habit of passing bougies himself. Having used a flexible No. 3, instead of a number 4, while the bladder was very full, the bougie slipped from his grasp and disappeared, the ivory knob remaining in his hand; after five days he began to experience pain upon urinating, which increased until the advice of a surgeon was sought. Mr. Lund, aided by the history of the case, detected a soft foreign body in the bladder, and as soon afterwards as the business of the patient permitted, undertook an operation for its removal. Six ounces of water were first injected into the bladder through a small catheter, and the stricture was split by a Holt's dilator. A small sized Coxeter's lithotrite was then introduced, but the foreign body could not be felt—ultimately, the bladder having been partly emptied, the offending substance was found, caught between the blades of the lithotrite and easily withdrawn entire, there being very little deposit on it. The patient was treated as recommended by Mr. Holt for a ruptured urethra, and did well until the fourth day, when, as Mr. Lund thinks, owing to imprudent exertion, severe urethral fever was developed, which went on to the formation of pyæmic abscesses. After a serious illness, prolonged through five months, the patient recovered with the stricture cured. The case is interesting as an illustration of that connection between urethral fever and pyæmia which has attracted the notice of surgeons for some years back. We ourselves would have preferred passing a small staff into the bladder, and removing the foreign body by an external incision, to dragging it through an already lacerated urethra, and can feel no surprise that the latter proceeding was followed by such severe symptoms.

A *Table of Major Operations* performed during twelve months at six hospitals in Liverpool and Manchester, possesses no value and requires no comment.

In commenting upon the volume of last year we expressed the hope that such a field as Manchester, with improved tillage, would yield better fruit, but it would seem that the efforts of the Lancashire surgeons have been directed to increasing the size of their plot rather than to improving the opportunities they already had. To form an imposing annual volume out of short articles or reports of solitary cases, which would find their fitting place in a weekly journal, seems but a poor policy, and one that cannot long survive, no matter how well supported by thick paper and well-leaded type.

S. A.

ART. XVIII.—*Fourth Annual Report of the State Board of Health of Massachusetts.* January, 1873. 8vo. pp. xiii., 473. Boston, 1873.

THOSE readers who retain any recollection of our remarks upon the reports preceding this one, will hardly need to be told that the present volume is a work of great value and extreme interest. The composition of the Board is the same as at the issue of the third report, and with but one exception, the same as the year previous. Dr. Henry I. Bowditch as Chairman, and Dr. George Derby as Secretary, again exhibit their peculiar adaptedness to their positions. As in previous reports, investigations of particular subjects have been committed to men of known eminence in their several departments. Experience and fitness thus continue to govern the constitution and the appointments of the Board.

In their general report, the Board briefly state the principal matters that have engaged their attention during the past year, advert to the results of former

legislation and suggest additional enactments; and direct the notice of the legislature to the essays and reports on special subjects, which have been prepared under their direction.

The first and longest of these papers was prepared by Prof. WM. R. NICHOLS, of the Massachusetts Institute of Technology, and Dr. DERBY. It is in response to a legislative order instructing the Board to investigate the subject of *Sewerage, Sewage, Pollution of Streams, and the Water-supply of Towns*. It was requested that the consideration of the sewage question should embrace, first, utilization as a fertilizer; second, the sanitary results of pouring sewage into the waters of the State; third, the increasing joint use of the water-courses for sewers and as sources of supply for domestic use. Upon these points it was requested that the views of the Board should be fully presented, together with such results of foreign experiment or observation as might be pertinent. The essay elicited by this vote is the first systematic and exhaustive treatment of the subject that has appeared in these volumes, though frequent references to the questions involved have before occurred. As one of the great social problems of our time both in a sanitary and an economic point of view, the disposal of sewage demands the fullest consideration. Every year the increasing density of population adds to the gravity and magnitude of the question. As connected with the purity of our water-supply, the subject is already one of vital moment to our own city. That the meeting of the different requirements of the problem involves great difficulties, renders it all the more important that attention should at once be given to it.

Référence is made, in the paper before us, to the so-called "dry-earth system." While admitted to be practicable and excellent, in certain circumstances and on a limited scale, this plan is shown to be utterly inapplicable and inadequate to the necessities of large cities. No practically obtainable quantity of dry earth would suffice to deodorize and absorb the enormous liquid sewage of a city. Neither could the earth be dried or removed at reasonable cost. The actual excretions alone of each human body would require four or five pounds of earth daily. This in a city of 100,000 inhabitants would amount to 250 tons daily; and this to be distributed, and re-collected, among say 10,000 houses. Even if otherwise practicable, the care and intelligence necessary to the success of this method could not be expected among the lowest classes. We are glad that the Massachusetts Board have applied the touchstone of common sense to the extravagant pretensions of some advocates of this plan, and have shown the utter folly of offering it as a means of relief to large cities. In connection with the detached privies common near country houses and in small villages, the dry-earth system has real advantages. Too often, however, in places where otherwise it would be desirable, the amount of labour required to carry it on will be a fatal objection to its use.

While commending the use of trapped water-closets and waste-pipes emptying into close sewers, the report points out the need of some device to prevent that escape of sewer-gas into houses, which, under certain circumstances, will occur in spite of the best traps. To obviate this trouble it is recommended that the main perpendicular sewer-pipe of each house be carried up above the roof, there to be freely open at the top. If this be impracticable in old houses, a small lead pipe connecting the soil pipe with the upper air will generally answer the purpose. If such an arrangement were made in all houses, pressure would be equalized throughout the whole system of sewers. The sudden influx of water from the streets or the setting back of tide-water from the outlets, would no longer cause foul air to bubble up through every water-closet, since the gases would find free egress and immediate dilution among the rapid cur-

rents of the upper air. Of course, however, the usual traps would be retained at all lower openings into the sewer-pipes.

Different methods of disposing of ashes and kitchen refuse are mentioned, but no suggestions are offered upon this troublesome matter.

To the question, what is in our country the best practicable disposition to be made of the sewage of cities? the answer given is, its discharge into tide-waters or into running streams. To the apparent wastefulness of this course it is replied that the utilization of the material costs more than the value of the product obtained. In many cases, however, the necessity of preserving the water-courses from injurious and offensive contamination imperatively demands a partial purification of the fluids which are poured into them. Here, therefore, processes not warranted by the mere money return may be the means of recovering a portion of the cost rendered necessary upon other grounds. Recognizing fully the great importance and the many aspects of the whole subject, our writers state their belief, founded on thorough investigation and after observation of the varied experiments made of late in England, that sewage may be so treated chemically as that the subsequent addition of its liquid residue to rivers shall not destroy the fish or render the waters offensive or unfit for any purpose except drinking. The expense of such process, if not fully covered by the value of the resulting fertilizers, will yet be reduced to something moderate. As cities and towns increase in number and in population, especially along the borders of our rivers, the contamination of the water, hitherto comparatively slight and tolerable, will become unbearable unless some efficient system of treatment be adopted. Already, indeed, some streams have become a nuisance, near large cities; and in many communities serious anxiety is felt in view of the yearly augmented pollution of the water-supply. It is obvious that the Massachusetts Board have not begun to agitate this question one moment too soon.

Of many plans investigated and described in this paper, for separating the offensive material from sewage before allowing it to enter the rivers, the preference is given to the process technically known as intermittent filtration. By it, it is believed the rivers would remain inoffensive, while vast amounts of fertilizing matter would be secured for agriculture. To cities upon tide-water, it is only recommended that their sewers be extended out sufficiently far to meet a strong current.

To show the exact amount and kind of impurity caused in running streams by the admixture of sewage, minute and careful analyses have been made of water from different points in several Massachusetts rivers, whose shores are most thickly covered with factory towns. The amount of adventitious matter found, is less than would have been expected. Naturally, it varies much at different times—the same stream which is practically pure during spring freshets, is very foul during midsummer droughts. The Board believe that with only reasonable care and cleanliness on the part of the dwellers on their banks, many of these rivers may for many years retain sufficient purity for most purposes, without alteration or diversion of the sewage.

Much of the foul material borne into the streams is deposited on the bottom; some undergoes chemical change of various kinds. The popular notion, that no matter how much filth enters a running stream, it is all destroyed or transformed before floating many miles by oxidation, is, we are told, more consolatory than correct. Some such purification does occur during the seaward flow of contaminated rivers; but is by no means as rapid or as complete as has been believed.

For supplies of pure water for domestic purposes, the Board recommend

recourse to the lakes and ponds so thickly scattered over New England. They advert to the singular abundance and purity of these reservoirs, and forcibly urge the policy of preserving the woodlands that now generally surround them, and of planting new forests upon tracts not available for agriculture, to replace those destroyed in thoughtlessness or cupidity. They desire that the people be made to realize the importance of preserving with jealous care the purity of these fountains.

That the people may hear both sides of an important question, we find, from the pen of Hon. P. E. ALDRICH, a member of the Board, *Additional Analysis of Evidence concerning Intoxicating Liquors*, with a statement of arguments and evidence against encouraging or permitting the sale of light wines and beer. Mr. Aldrich holds opinions directly opposed to those so ably advocated in a former report by Dr. Bowditch. The doctor assumed that men would use stimulants; but that if freely supplied with light and pure wines and beers, they would cease to crave or to use strong liquors. The present writer maintains on the contrary, that people beginning with the lighter potations finally pass to the stronger; and that men once possessed with the craving for spirits are never satisfied again with the weaker beverage. His argument is largely founded upon testimony as to results which followed in Great Britain from the passage of an act favouring the opening of beer-houses. The testimony was elicited by a committee on intemperance, appointed by the lower house of convocation of the province of Canterbury. It was the decided conviction of the committee from the evidence brought before them, that among the fourteen million people comprised in their province, cheap beer had not only failed to supplant spirits, but had unquestionably aggravated the evils it was designed to alleviate. It should, however, be borne in mind that there are other causes in action which may be responsible for that increased intemperance which the committee attribute to cheap beer. The writer of the paper before us, unlike Dr. Bowditch, believes in the right and policy of suppressing by law all sale of stimulants by the glass. Besides the English evidence, he quotes numerous brief and general utterances of various American clergymen, lawyers, and physicians, which support his own views, though giving little or no ground or reason for their opinions.

The increase of intemperance in France should hardly be attributed to cheapness of light wines, to the ignoring of all the influences which for many years have been active in that unfortunate land. If it be true, as alleged, that the wine-growing districts of our own land exhibit increased intemperance and an increased demand for strong liquors, the facts must go far to support the view of the party represented by Mr. Aldrich.

The report by Dr. H. K. OLIVER upon *The Character of Substances used for Flavouring Articles of Food and Drink*, should be read by all housekeepers. It was found that an oil of bitter almonds, containing an alarming proportion of prussic acid, is in common use by confectioners, in a very concentrated form. The danger is augmented by the variable proportion of the acid in different samples. The highest authorities state that the desired flavour is not dependent at all upon the presence of the poison. Of 150 pounds imported into Boston yearly, one-third was used by three wholesale druggists, and nearly all the remainder by a manufacturer of patent medicines. An artificial imitation of the oil, nitro-benzol, used for soaps, and possibly to some extent by confectioners, is a still more deadly poison, though free from prussic acid.

Artificial fruit-essences are largely used for candies, and in soda-water syrups used in the country and at second class shops in the cities. Sickness has been traced to the use of confections thus flavoured.

Jellies, bearing the names of various fruits, are largely artificial. If in this country we escape articles utterly destitute of all fruit, it is because the cheapness of apples affords a convenient base. By far the larger part of the jellies sold in our shops are made of apples, flavoured and coloured to resemble other fruits. The use of essences, ethers, and an immense variety of drugs, in making artificial liquors or in flavouring and improving crude spirits, has long obtained in Massachusetts as elsewhere. The Board believe, however, that such adulteration is, in the large cities, nearly confined to the lowest class of retailers, but unfortunately is a little less rare in the country towns. Beer and ale are found to be free from harmful ingredients.

Extract of vanilla, even when purely made, has been known to undergo poisonous change when long kept.

An admirable practical paper on the *Drainage for Health*, of cellars and yards and the construction and care of wells, sinks, and sewers, should be read by every householder in the rural districts.

Dr. EDWARD JARVIS contributes a paper worthy of his reputation, upon *Infant Mortality*. The expositions given of the influence of food, of locality of residence, of social customs and fashions, and of poverty, ignorance, and prejudice upon infant vitality, are as concise as they are truthful and complete.

The next article is a curious and valuable essay by Dr. GEORGE DERBY upon the *Food of the People of Massachusetts*. It is assumed that experience and observation rather than theoretical considerations should guide us in estimating the value of food. The fact is also noticed, that while a strong man, living in a pure atmosphere, can maintain robust health on a sufficiency of almost any kind of food, yet that to the large numbers living in confined air, to the feebly organized, and to women and children, a choice between different articles of diet may be a matter of supreme importance. Quotations are made from the reports of physicians throughout the State as to the sufficiency, variety, and character of the popular dietary in their districts. These show that to thousands of families, bad cooking, excessive use of pastry and of fried food, poor bread, and sometimes a preponderance of salted meats, are the foes in the household that are accountable for much ill health. Too little variety in diet is thought to be a common fault in both city and country. Men will pine and sicken upon a regimen theoretically perfect if long unvaried. Dr. Derby deprecates in strong terms the enormous consumption of trashy and indigestible pies. He also refers forcibly to the deplorable American habit of bolting the food in the shortest possible time. The excessive use of tea, often made especially harmful by long boiling, is believed to be almost as prevalent and hurtful among the working women of our cities as it is described to be in England by recent writers. The daily consumption of several pints of this potent decoction, to the partial exclusion of nutritious food, is believed to be the frequent cause of serious nervous disturbance and of general ill health.

In a paper called *Analysis of a Correspondence on some of the Causes or Antecedents of Consumption*, Dr. BOWDITCH pursues the investigation of a subject to which under different aspects he has devoted much attention for many years. Printed questions have elicited replies from all parts of the State and from other States and countries. Taken together they form a considerable body of opinion upon a variety of questions connected with this most formidable of diseases. We are interested to learn that Dr. Bowditch hopes to publish at some future time his views on the prevention of consumption.

Prof. H. B. HILL continues in this volume the researches made by order of the Board into the *Adulterations and Impurities of Food*. Twelve samples of

pickles from different sources were examined, and ten of them found to contain sulphate of copper.

In an article upon *The Homes of the Poor in our Cities*, Dr. F. W. DRAPER describes things as he found them in the poorer quarters of eight cities. In all were specimens of every possible fault and evil in the dwellings of the poor. The gloomy picture is brightened, however, by accounts of the excellent provision made by several large manufacturing corporations in the way of homes for their operatives, in which health, comfort, decency, and self-respect are secured to all. That such pestilent holes as disgrace hundreds of our large cities should be allowed to exist for one day, is a reproach alike to worldly wisdom and to morality. Not only the sense of right, but an enlightened regard both to municipal and to national prosperity require that the poor should be enabled and encouraged to live decently and in consonance with the laws of health.

We are certain that it is for the interest of every city to look closely after the health and comfort of its humblest inhabitants. No less sure is it that the well-being of the nation at large requires and warrants that the cities be held closely to their duty. This is a government by the people, and we cannot afford to allow thousands of voters to experience the degrading influences of filth and squalor. We welcome this paper as one well adapted to awaken the public to a sense of duty. The evils depicted are to be found in all our cities. In regard to prevention and cure, Dr. Draper states that ample, or even excessive, legislation already exists in Massachusetts. There seems, however, to be a lack of practical methods of enforcement, and a want of public interest.

In concluding this brief sketch of the report we cannot refrain from again commending the character of the work. There is scarcely one paper but should interest and instruct any intelligent reader. Taken together the annual volumes form no mean introduction to the study of social science and public hygiene.

B. L. R.

ART. XIX.—*Second Annual Report of the Board of Health of the Health Department, City of New York*, April 11, 1871, to April 10, 1872. 8vo. pp. 408. New York, 1872.

THE general or introductory report of this volume sets forth briefly the aims and labours of the board, and the success or failure of its various endeavours. The condition of the so-called tenement houses is considered by the President to be one of the points most worthy of attention. More than one-half the population of the city inhabit these dwellings. As a witness that the board has not worked in vain, it is found that the mortality in the worst of these has fallen off 15 per cent. during the last four years. In some instances where thorough reconstruction was compelled, the death-rate was reduced 75 per cent. Trades or manufacturing processes injurious to public health have also received constant supervision. One extremely important work has been the underdraining of extensive tracts in the upper part of the island to fit them for occupancy. This one manifestation of foresight has doubtless saved thousands of lives. Reference is made to the extra labour thrown upon the officers by the epidemic of smallpox. So far as power and authority would allow, these gentlemen seem to have discharged their duties admirably.

The same suggestion is made as to the outlets of sewers, that we have noticed

in the Massachusetts report, viz., that these should be carried well out into the tidal currents. At present the accumulations near the mouths of sewers are exposed at low tide. The lamentable waste of fertilizing material under the present system, and the consequent inevitable exhaustion of the most productive soils at last, are forcibly set forth. It is only in the sub-report made by the engineer, however, that we find any attempt to show how this waste can be avoided. The suggestion is, to have immense basins in the rivers at sewer outlets, in which the more solid matters should accumulate. Three million tons is the amount estimated to be deposited in, and "readily removed" from, these receptacles. How these basins are to coexist with shipping at the wharves, and how emptied in a way to save contents, we are not told.

The removal of garbage and ashes seems about as difficult, in practice, in New York as elsewhere. It is recommended to be placed under the immediate supervision of the police. The slaughter-houses are said to be reasonably well managed; but sufficient evil attaches to justify the recommendation of a grand abattoir. At present the offal from the different establishments is conveyed to a large floating arrangement, moored at a wharf all day, and at night towed out into the stream where its load is subjected to the usual processes of fat-rendering. This plan, though a great improvement on former ones, is obviously not faultless.

The over-crowding of the poor, in the tenement houses, is said to be worse than in any other civilized city. Moreover, in spite of all the efforts of the board, the evil is increasing. The board asks for a modification of its powers, so that it shall be able to order and compel the reconstruction of houses radically faulty. Heretofore the only course has been to compel their vacation, which might, or might not, lead to reconstruction. In some districts of the lower end of the island, lofty and substantial warehouses are being vacated, owing to the movement of business in other directions. It is urgently advised that such buildings be at once, and as rapidly as they become empty, transformed into well-arranged tenements, provided with every known facility for preserving health, and for avoiding the causes of pestilence and misery among the thousands who will seek to inhabit them. Even were it possible to provide these teeming multitudes with country homes, and to take the men to and from their city work by cheap and rapid trains, the greater proportion would still cling to the courts and alleys to which they have always been accustomed. What can be done and ought to be done, and what the health authorities strenuously labour for, is to render these immense human hives decent, airy, light, properly drained, and capable of cleanliness. It is certainly more humane, and also more economical in the end, to make the outlay needed to transform these deserted warehouses into model tenements at once, rather than to wait until the terrible mortality, sure to follow their occupancy unchanged and unimproved, shall affright the city and compel their vacation.

As seems to be the case in all our large cities the work of the board is impeded and nullified by want of authority, and by the failure of citizens and courts to enforce the laws. Indifference, unfaithfulness, and corruption, are met at every turn.

Want of power was peculiarly felt in the efforts made to restrict and destroy the epidemic of smallpox. Under all difficulties, however, the officials of the Health Office seem to have worked well and faithfully. The utterly faithless manner in which the street cleaning has been neglected, and the wretched condition of pavements, have been sources of disease fully appreciated by the board though little under their control.

With a view especially to the prevention of a cholera epidemic the tenemen

houses were twice, during the spring and summer of 1871, thoroughly inspected, cleaned, and whitewashed; drains and privies repaired and disinfected, and everything done that was possible to lessen the dangerous unwholesomeness inseparable from bad construction and overcrowding.

The Sanitary Inspector and Superintendent presents a report which introduces brief reports from each one of the local district inspectors. There are nineteen of these, each dealing with matters affecting the sanitary condition of the writer's own district: Written by medical men, all evince interest and intelligence. Several deal at considerable length with sanitary questions which happened to become especially prominent in their districts. Inspector H. R. Stiles, M.D., gives an exceedingly instructive account of some of the large tenement houses in his district. Exact details of the extent and character of the dilapidations, imperfections, and faults found in these, with a statement of the rents received for building and for rooms, are first presented; then follows an account of the changes and improvements made by the owners under the advice and supervision of the inspector, with cost of alterations, and statements of rents subsequently received. The gratifying results have been, not only vast additions to the health and comfort of the tenants, but increased income to the proprietors. Thus we are told that while these gentlemen began sullenly, and only under threat of having their houses closed, they ended by being convinced the change was for their good as well as the tenants', and willing cheerfully to continue the good work in other quarters.

One remark made by superintendent Moreau Morris, M.D., is well worth repeating and remembering. It is not in the dwellings of the poor and ignorant only, that we find the laws of health ignored and broken. In mansions of wealth and luxury, and in counting-rooms dealing with extended commerce, we may often notice extraordinary neglect of the plainest conditions of health. Especially in the matters of overheating our houses, and closely confining the stifling blasts from the furnaces, and in rigorously excluding the sunlight, do our countrymen sin grievously.

A single manifestation of one of the crying evils in our time and country—bad, dishonest, and unskilful work by half-taught and faithless mechanics—is signalized by Dr. Morris as responsible for an immense amount of disease and death. Bad plumbing, is the frequent cause of deadly sewer-gas pervading and poisoning the air of our houses.

Attention is directed to the sanitary necessity of thorough drainage in all wet and springy regions. It is not enough that the surface-water and sewage shall be removed. This may be well done, and yet the soil left saturated with moisture. Deep and substantial culverts, especially where brooks and springs have been filled up, are of the greatest importance.

The report on vital statistics opens with an admission of the discouraging incompleteness of the returns made of births and marriages. Clergymen are required by law, and under penalties, to report every marriage; yet many of them fail to do so. Of the births it is estimated that only two-thirds are registered.

The mortality tables are exceedingly full, viewing the facts under the most varied relations.

A table of great interest exhibits the population, annual mortality, and death-rate, of some seventy American, and over one hundred foreign cities. Some of the death-rates, by their palpably absurd inadequacy, point to imperfect registration. It is probably fair to assume, however, that the percentage is nowhere overstated. Some of these are as follows: New York 28.6 (28.6 deaths to each 1000 inhabitants), Brooklyn 25.9, Philadelphia 22.9 (increased

since to 26), St. Louis 16.9, Chicago 23.3, Boston 23.5, New Orleans 29.2, Richmond 30.4, Vicksburg 41.8, Memphis 46.1, Montreal 36.9. Paris shows for the same year—1871—the great mortality of 54.7; Berlin 38.9; in both of these, the figures are larger than before the war.

The sanitary differences of different parts of the city are well shown by death-rates in each ward.

The term "typho-malarial" is adopted by the compiler as designating a real variety of fever, non-contagious, lacking the pathognomonic traits of typhoid, and dependent on malaria as its cause. He, however, seems also to admit the possibility of an actual coexistence or combination of the two fevers, typhoid and remittent; and would extend the name to include this also.

Cholera infantum as a name for disease, is rejected from these reports from a conviction that it is used with great vagueness; while apparently infant mortality from bowel complaints is principally reported under the name of diarrhœa.

A table showing the deaths "directly or remotely due to intemperance," seems to be curiously and uselessly elaborate. Some one hundred and twenty disease-headings from "accident" to "uremia," are set forth as the final weapons by which intemperance has slain 556 persons, of fourteen specified nationalities and stated age, sex, and civil condition. Here again we find a needless profusion of trivial distinctions and subdivisions. "Bright's disease" alone, figures as the cause (secondary) of 61 deaths from intemperance, while "Bright's disease" with eleven distinct complications, accounts for 36 more. Nearly as many varieties of liver disease are enumerated.

A table showing the occupations of these 556 victims seems to us utterly useless. Even if there were not a large proportion scarcely assignable to any trade or calling, such information would be of no avail without knowledge of the comparative numbers following each avocation.

Scurvy appeared as an endemic in the Lunatic Asylum on Blackwell's Island. It is attributed to "an insufficiency of antiscorbutic food, and a lack of attendance." We hope this experience may prove a warning to the authorities of other cities not to carry their economy too far. Dr. Russel justly remarks in this connection, "An abundance and variety of the very best food is now recognized as an essential element in the treatment of the insane."

Attention is directed to the singular disproportion between the deaths by cancer in the native and the foreign born. Four or five times as many foreign born as natives, in proportion to respective total mortality, die of cancer in New York. The U. S. census, we believe, indicates a discrepancy about half as great in the same direction. The fact that this disease is one of adult life, accounts probably for part of the difference between Americans and foreigners.

The mortality by phthisis varies in different wards from 11.2 to 19.4. The excess of phthisis mortality in the Irish and German citizens—32.5 and 27.9—is also partly dependent on age; but we believe not wholly by any means. As here presented the deaths of the foreign born to the native, by phthisis, are as 6.5 to 2.8.

Curiously minute and elaborate tables are presented, giving a complete history of the fatal accidents connected with the Orange procession riot of July 12th, 1871. Of the fifty lives lost, three-fourths are believed to have been those of persons wholly innocent of any mischievous intentions.

Very full details of suicides are presented, from which we learn that Paris-green is the favourite poison used; and indeed stands fourth in the list of all means of self-destruction, being preceded by shooting, stabbing, and hanging.

The report of the Deputy Register of Records exhibits the forms and blanks

in use. An excellent form for a condensed weekly statement of mortality includes a full record of meteorological conditions, both absolute and, as regards temperature and humidity, compared with means of corresponding days for ten years past.

Special reports of considerable value are presented. One upon smallpox details the system pursued to secure general vaccination, and the method in which cases of the disease were dealt with. Judging by the account given us, the epidemic was as vigorously and effectively fought as it could be with the limited powers of the board and amid the unfavourable circumstances of the case. As compared to the epidemic in Philadelphia, the disease in New York prevailed longer and with greater uniformity. In Philadelphia, the disease may be said to have begun in October and ended in April. In New York it prevailed from the beginning of 1871, causing 208 deaths in the first quarter, 304 in the second, 164 in the third, and 129 in the fourth. The next, or first quarter of 1872, gives 326 deaths. To all appearance the disease had not reached its highest fatality at that time; but the tables extend no further. The percentage of deaths upon cases is given as 35.58. In Philadelphia, the mortality diminished from December, 1871; and from January to February, 1872, it fell 40 per centum. The next month showed only 25 per cent. decrease, but the following—April—saw a reduction of 60 per cent. So far as we can learn, the epidemic in New York at no time became one-quarter—perhaps not one-eighth—as prevalent as in Philadelphia. The percentage of deaths to cases appears to have been slightly less in the latter city.

The N. Y. board agree with the medical profession at large in deeming the late epidemic one of peculiar virulence. They believe that vaccination from a healthy infant is, practically, the best available protection. Lymph from successful revaccinations has been known to prove non-protective, even when apparently active. Disinfection of rooms by sulphur fumes, and clothing by sulphate of zinc and carbolic acid in water, has been efficient and reliable.

A special report by Dr. Stephen Smith on the movements and condition of the tenement house population, deals with the subject in a wise and practical manner. The remedies pointed out for the existing overcrowded and unwholesome residences of the poor, are thus summed up: Improvement and reconstruction of existing tenement houses; building of "model houses;" cheap fares on the railroads; and the conversion of deserted warehouses, as before described. To secure these ends legislation is needed and is asked.

A report upon the recent epidemic of cerebro-spinal meningitis, by Dr. Moreau Morris, is well worth attention. A principal point made is the almost invariable connection of the cases with escaping sewer-gas or with foul, damp cellars. In forty-eight cases the facts of this character are briefly stated. Almost invariably we read of loose connections or broken joints in the sewer-pipes, allowing the gas to escape into the cellar.

A paper by Dr. Stephen Smith upon the sanitary influences of heat, is especially interesting and valuable for the practical suggestions towards relief from the excessive and fatal temperature of the city in July and August. The very great influence of shade trees is well explained and illustrated. In several ways, trees moderate the summer heats, besides purifying the air and neutralizing the poison that produces intermittent. Shade trees, therefore, should be planted and protected all over the city; besides being preserved throughout the State, for their influence on the general climate. The second means proposed for combating the summer heats is an unlimited supply of river water, for universal bathing, in great public baths, and for wetting and washing the entire street surface daily. Steam-pumps with a stand-pipe may be established

on the river-shore to connect with a system of pipes distinct from those for the Croton water. The saving of the latter, together with the use of the river water for power and many other purposes, would fully pay the cost of pumping, and, perhaps, even the interest on the outlay.

The paper just noticed, and several of the other reports, are illustrated by elaborate diagrams and maps. B. L. R.

ART. XX.—*Annals of Cholera, from the Earliest Periods to the Year 1817.*

By JOHN MACPHERSON, M.D., Inspector-General of Hospitals H. M. Bengal Army. (Retired.) 8vo. pp. x., 235. London: Ranken & Co., 1872.

THE first chapter of Dr. Macpherson's book is devoted to the consideration of the literature of cholera. This is, as is well known, sufficiently voluminous, and yet comparatively little has been written concerning the early history of the disease—a fact, in view of their opportunities for its study, not creditable, he thinks, to English physicians in India. It is to supply this deficiency that he has published these *Annals*, which he says he has endeavoured to write in the impartial spirit of an historian. He therefore gives, as far as possible, the accounts of authors in their own words, allowing the reader to draw his own inferences. He, nevertheless, has a theory of his own as to the nature of cholera; and although this is elaborately stated only in an appendix, it is not difficult to see that it has influenced many of his conclusions.

In the first place, he combats the popular belief that cholera is a disease which dates only from the year 1817, by referring to the works of early writers on medicine. From the time of Hippocrates down to the commencement of the sixteenth century, there is scarcely an author who does not describe a disease, characterized by serous evacuation, suppression of urine, loss of fluid to the system, lividity of countenance, collapse, rapid recovery in some cases, protracted recovery with secondary fever in others, and by relapses.

There is, moreover, evidence that the disease was a grave one, and that many of the remedies now prescribed in cholera were employed in its treatment, and it is curious to note that the same difference of opinion existed then as now in regard to the propriety of arresting or favouring the discharges from the stomach and bowels. Among those who recommended the administration of eliminants may be mentioned Aretæus of Cappadocia, Aetius, Rhazes, Avicenna, and Ayurveda of Sucreta.

During the period, from the beginning of the sixteenth century to the year 1817, which the author next studies, epidemics of bowel affections, of considerable magnitude, appear to have been not uncommon, and there is good reason for believing that some of these were cholera. In fact, so wide spread were some of the epidemics that they gave rise, in France, to a popular rhyme,¹ which, while it embodies some sound advice, also shows what were the general impressions of the causes of the disease. It is, of course, impossible, in a brief notice, such as this, to follow Dr. Macpherson in all his investigations, and we will, therefore, content ourselves with saying that, among English physicians, Sydenham and Willis have given good descriptions of the disease,

¹ Tiens tes pattes (feet) en chaud,
Tiens vides tes boyaux (bowels),
Ne voyez pas Marguerite
Du cholera tu seras quitte.

and that the latter distinctly recognized the profound impression which is made upon the nervous system. Both Sydenham and Willis condemn the use of evacuants, although neither of them recommends that the discharges should be abruptly arrested. The former gave diluents in the early stages, but soon had recourse to laudanum, and continued its use longer than has been customary in more modern practice. Willis recommends cordials and opium.

The account which Sir John Pringle gives of the prevalence of cholera, dysentery, and fever, in the low countries, is interesting, especially with reference to Pettenkofer's theory of the origin of the first-named disease. When speaking of intermittent fever, he says: "By looking into their wells, it is easy to determine the healthiness of their villages. These wells being fed by the underground water, and being observed to sink proportionally to the drought in summer, are at once a proof and a measure of the constant exhalation of this concealed water, through the pores of the earth, occasioned by the heat of the sun." Another physician, Dr. Tralles, expressly refers the oppression of the circulation to the blood being drained of its serum, and attributes the disease to the sudden refrigeration of the body during great heat—a theory which, in some form or other, has been more or less held in all ages. We also meet with the expression rice-water evacuations—usually considered the characteristic of Indian cholera in the histories of some of these epidemics. Several epidemics of colic are also described, but it is difficult to believe that any other form of colic than that dependent upon lead-poisoning can be epidemic, and even when arising from this cause, it is not likely that it would extend further than the country in which it originally appeared.

There is also evidence of the existence of cholera in an epidemic form in India during the same period—our knowledge of it in different localities varying, of course, with the degree of intercourse between that country and Europe. The earliest accounts of the disease are furnished by the Portuguese, who speak of its occurrence in 1503, at Goa, as if it were not an unusual circumstance. Perhaps there can be no better evidence that the epidemic of 1817 was not regarded by the natives of the country as a new disease, than the fact that, during its prevalence, they went in numbers to the shrine of Oola-Beebee (Lady of the Flux), who had been worshipped as the goddess of cholera for centuries. Moreover, the existence of a tolerably acute form of the disease, in Arabia, did not escape the observation of Karsten Niebuhr¹, in 1761–63. M. de Gentil and M. Sonnerat, also give admirable descriptions of cholera as it occurred in India. Mr. Jameson, to whom we owe an account of an outbreak at Ganjam in 1781, says that the disease was so violent, and so often proved rapidly fatal, that it was, at first, attributed to poisoning, especially through the drinking water, but afterwards to vicissitudes of weather and to exposure of the troops. In 1782 we find the use of castor oil recommended by Curtis, but he evidently did not rely upon it to any great degree, for his treatment in the main consisted in the use of strong ammonia and stimulants, with some opium.

The year 1817 is one of great interest to the student of cholera; for although Dr. Macpherson has shown very clearly that the disease did not originate then, there is no doubt that it assumed, at that time, a much more aggravated form, and that epidemics have since been more frequent and severe. Another popular error which he also corrects is the belief that the epidemic of 1817 began in the Sunderbunds, or in a small way at Jessore, for in that year there was a fatal case of cholera in Fort William, in the month of March. In May and June the disease was raging epidemically in Kishnaghur and Mymensing.

¹ Voyage dans les Mers de l'Inde, 1779.

In July it was at Sonergong, in the Dacca district, and as high up the river as the large city of Patna, and it did not reach Jessore till August, and not till after the middle of the month. It broke out at Calcutta at much the same date or a few days earlier. When it first appeared at these places, although occurring later in the year than usual, it was considered, by the medical authorities, the ordinary epidemic of the season, presenting, however, symptoms of unaccustomed violence. It appears, however, to have been thought, for the first time, contagious, and it had, undoubtedly, acquired a much increased power of spreading.

In regard to the causes which led to the epidemic of 1817, Dr. Macpherson says, the most reasonable conjecture is, that the disease was intensified by the unusual weather of that year.

"In the lower and western portion of the Gangetic Valley, there was a long protraction of heavy rain (one hundred and twenty inches, or nearly double the usual amount of rain, are reported to have fallen during the year), while in the eastern part of Bengal things wore a different appearance. In that quarter, there was a deficiency of rain, and the rise of the river was four feet short of its usual height. There was, therefore, undoubtedly, the influence of unusual weather at work. We have already said, that it is known to induce attacks of illness in individuals, and also to influence the course of epidemic diseases. What further power over disease it has, no one can pretend to lay down positively. Incapable though it may be of producing a new disease, yet it may possibly be able to intensify an old one, and cholera was an old malady in Bengal, though latterly quiescent."

He shows very conclusively that it could not be attributed either to overcrowding, bad food, famine, or to filth. In reference to overcrowding, he says:—

"But no cause of such a nature existed in Bengal in 1817. We know of no great pilgrimages or assemblages there in that year. Besides, the pilgrims to Juggernath only skirt the delta of the Ganges, and the pilgrimage to Saugor Island, at the mouth of the Hooghly, is comparatively a small one. Cholera did not become epidemic till some months after the season of pilgrimage, and there is no evidence to show that in the early part of the year there was cholera at either of these places."

The methods of treatment adopted by physicians at the beginning of the epidemic do not present much novelty. The old question whether to promote the removal of the morbid secretions by means of emetics, purgatives, diluents (or in modern phrase, eliminants) or not, continued to engage attention, as in the days of Hippocrates.¹ It soon became evident to intelligent practitioners that the administration of diluents only led to waste of time—that nothing could be more dangerous than any delay in supporting the patient, and that by giving aperients and emetics in the commencement, the virulence of the disease was increased. They, therefore, usually became advocates for the early use of stimulants and opium. Were it not that the application of the actual cautery to the feet has passed out of use, and that pepper is no longer placed in the eyes of patients to rouse them from collapse, we should have little reason to congratulate ourselves on the advances made in the therapeutics of the disease.

It is noteworthy, especially in view of the theory of cholera, which Mr. Macnamara advocates, that among the general directions which were given for the avoidance of the disease, people were recommended to have their drinking

¹ In the face of this evidence, the claims to novelty which have been made for the eliminant plan of treatment by castor oil or other purgative, cannot be maintained.

water boiled. Among the exciting causes of the disease are mentioned the use of indigestible articles of food, and sleeping with the abdomen uncovered.

The reader who is interested in the subject will find the nomenclature of cholera very fully discussed in a separate chapter. The author thinks that, on the whole, the most satisfactory derivation of the word cholera is from *χολος*, the old form of *χολη* bile, and *χολεργη* is from *η χολεργη νοσος*, the bilious disease, or disease of bile. A curious fact in connection with the nomenclature of the disease is the corruption, by the French, of the Hindoo word *Mordeshee* or *Morshee*, into *mort de chien*, which, according to Père Martin, had taken place as early as 1702.

In an appendix "On the Analogies of Cholera Nostras and Cholera Indica," Dr. Macpherson has endeavoured to prove that these diseases are really identical, and that the only points of real difference between them is one of degree, which he does not regard as sufficient grounds for separating them, especially so long as we continue to regard *scarlatina simplex* and *scarlatina maligna* as the same disease, and are willing to regard the various manifestations of influenza as due to one cause. When speaking of the contagiousness of cholera Indica, he says, that if we admit that epidemic diarrhœa may sometimes be contagious, it is very unlikely that this should not sometimes be true of epidemic cholera nostras also. But in addition to differences as to malignity, contagiousness, and power of spreading, the prevailing belief is, that there is a specific poison present in cholera Indica. Supposing it to be established that this specific poison really exists, for this has not yet been done, then almost identical symptoms are produced in the absence and in the presence of a specific poison, which, unlike the poison of smallpox or that of typhoid fever, does not produce any specific effects.

We have endeavoured, in the preceding notice, to lay before our readers some of the most important results of Dr. Macpherson's labours, and it only remains for us to say, in conclusion, that any one to whom the book itself is accessible, will do well to read it.

J. H. H.

ART. XXI.—*Memoria Historica das Epidemias de Febre Amarella e Cholera-Morbo que têm reinado no Brasil.* Pelo Dr. JOSÉ PEREIRA REGO. Do Conselho de S. M. o Imperador, Medico da Imperial Câmara, Presidente da Academia Imperial de Medicina, etc. etc. etc., 8vo. pp. 228. Typographia Nacional. Rio de Janerio, 1873.

Historical Memoir of the Epidemics of Yellow-fever and Cholera, which have occurred in Brazil. By Dr. JOSÉ PEREIRA REGO, President of the Imperial Academy of Medicine, etc. etc., Rio, 1873.

THE consideration of the question of cholera in South America involves the great problem of the spontaneous development of the disease in Paraguay, a doctrine which is held by many medical men in La Plata and Brazil, though it finds there as many opposers as elsewhere.

The eminent official position of the author of the monograph, the title of which is placed at the head of this article; the facilities which he most certainly enjoyed in obtaining access to reliable sources of information; his own personal opposition to the theory of generation *de novo*; and the importance of the question he discusses, certainly justify us in expecting that Dr. Rego's book

will throw new light upon the subject. In the following pages we propose to examine that portion of the work which treats of cholera in Paraguay.

Dr. Rego, discussing the first epidemic of cholera in the army, writes as follows:—

“From the perusal and analysis of all the facts that we have been able to collect, it is difficult, if not impossible, to discover the cause of its origin in the army, especially, since in view of the manner of its appearance, medical men of the staff hold the opinion that the disease was not traced to contagion, but that the unknown *quid* that produced cholera in the army was to be found in the hospitals of Itapirú or its neighborhood. Without feeling ourselves authorized to deny the facts, yet in view of the authenticated characters of the first cases occurring there, we find that it would be the first instance that science has recorded of the spontaneous development of cholera far from the places where it originated, as we are taught by the historical traditions of the epidemic.

“The occurrence of the disease in Pernambuco and its manifestation in Guany in 1862, without the importation of new productive elements, are additional proofs of the correctness of this view, which tends to establish an exception to the received doctrines; but even here we think the explanation is easy and admissible without doubt, for if there were not importations of new productive elements there was at least exposure to the element of the first epidemic not yet extinct, either by the exhumation of the bodies of those who died of cholera, many of which might not have been entirely consumed; or by conditions of the soil, or by the accumulation in which they were buried. But still, taking into consideration the facts that occurred on the steamer “Feixeira de Freitas,” and the subsequent development of cholera in the army, we are led to suspect that in all probability this was the first importation of the disease into the army, whence it afterwards spread to La Plata, etc. For it is generally known that the steamer “Feixeira de Freitas” left Rio during the latter days of February, with over two hundred soldiers for the seat of war, and that two days after leaving port the troops were attacked with cholera, and also, that the steamer, following its route, on entering the Parana River (Argentine Republic), and when opposite to Goya, on the 3d of March, received orders to return immediately to Santa Catherine (Brazil), where the patients were sent to a Lazaretto, etc.”

Now, Goya is a place in the Argentine Republic, situated two hundred miles distant from the locality where the armies were encamped, and before the steamer had an opportunity of communicating with them it received orders to return to Brazil, which it did without touching shore. We cannot understand how the disease could have been carried to a place by a steamer that did not come within two hundred miles of the infected locality, and which was immediately ordered back to Brazil as a safeguard to the armies. This Dr. Rego does not even attempt to explain, but remarks:—

“Let this be as it may, and dropping the discussion of such important questions, the solution of which depends upon an exact and careful appreciation of all the circumstances connected with it, we will say, that the unfortunate outbreak of cholera in the army awakened the solicitude of the general,” etc. etc., and the author then goes on to describe measures for its relief.

This is all that we find in Dr. R.'s volume to account for the appearance of the disease in the army, but Dr. R. himself furnishes us with another and no less interesting case of the development of the disease in which the cause could not be traced. We refer to the expedition of Mattogrosso, a province of Brazil, whose only communication with the world was through the Paraguay River, and which in consequence of the war was completely isolated. This province raised a small army within its boundaries, which was shut up in its own territory, and suffered dreadfully from the privations consequent upon

disease and war. Among these troops cholera appeared, and after describing the epidemic, Dr. Rego speaks thus :—

“The appearance of this epidemic in an expedition which had no contact whatever with men, or materials coming from places attacked with cholera, awakens interest in the solution of these two important questions: 1st. Was it a true epidemic of cholera or of some other disease simulating it? 2d. Did it develop by transmission or spontaneously? The first question we think is solved by the existence of the symptoms noted, which leave no doubt in the mind as to the existence of cholera; in regard to the second question, it is unsafe to form a judgment, but we may hope for a solution with more positive and reliable information. Still, preferring to leave this solution to the eye-witnesses of the epidemic, we may venture as an opinion, that seems to us plausible, that the disease was carried to Mattogrosso through the *infected atmosphere of Paraguay*,” etc. etc.

At last we have Dr. Rego expressing an opinion in conformity with the facts, and to convince him of what he merely supposes possible, we will examine his description of the invasion of Rio Janeiro, from which place, according to him, the disease is supposed to have been carried to the army.

Concerning the outbreak of cholera, in the second invasion of Rio Janeiro (the first having taken place in 1859), Dr. R. says :—

“The first and well characterized case occurred on board the steamer ‘Santa Cruz,’ which arrived at this port on the 1st of January, from Rio Grande, where, according to the papers, the disease was then raging.”

Now upon turning to page 203 we find the following description of the invasion of cholera in Rio Grande.

“The first case appeared in the city, on the 22d of January, the disease having been imported from the United States, though at that time the city was suffering from bilious and bloody diarrhœa which did not present the aspect of cholera or *cholerina*.”

These statements are so contradictory, that we must ask Dr. R. how is it possible that if the disease appeared in Rio Grande on the 22d of January, the steamer “Santa Cruz” could have brought it to Rio Janeiro, where it arrived the 1st of the same month?

The “Santa Cruz” was coming from Paraguay and called at Rio Grande three or four days before reaching Rio, so the steamer was at least twenty-five days in advance of the first importation to Rio Grande, how then could the cases occurring on board be traced to its stoppage at Rio Grande?

In the case of the “Feixeira de Freitas” we have a steamer carrying the disease to a port that it never reached, now in the case of the “Santa Cruz” we have another steamer carrying cholera to Rio from a port where it did not exist at the time of its departure.

However curious all this may appear, we will next see another inexplicable statement that Dr. Rego puts forth in his anxiety to import cholera to Rio from any place whatever but the proper one.

“The discovery of this case [on board the “Santa Cruz”] and of others that followed among the passengers and persons with whom the latter communicated, led many to believe that this steamer had conveyed the disease, but the existence of some sporadic cases in 1866, and the report of twenty deaths from *cholerina* in 1865, after the arrival of vessels from Marseilles, which were not subjected to quarantine, as the “Berthe” and “Franciscopolis”—the captain of this latter having died of cholera in September—and from other facts connected with that same period that we have related in our report to the Secretary of State in 1868, we are led to doubt such origin, and to consider the disease imported rather from Marseilles or other foreign ports.”

The italics which are our own form the best comment we can offer on this

proposition, which involves no less than the importation of cholera poison to *the tropics*, its remaining dormant for two years, and then developing itself by mere coincidence upon the arrival of a vessel from Paraguay with cholera on board!

The foregoing is all that we have found in Dr. Rego's book in connection with the epidemics of Paraguay, and how much he has proved, and how much remains yet to be proved, concerning the origin of the epidemic the reader will readily see for himself.

The infection of Rio Janeiro through the "Santa Cruz" coming from Paraguay, is the most important fact drawn from Dr. Rego's statements, and if from the beginning these facts had been impartially analyzed by him, he would have rendered a great service by contributing to prove the truth of what he has not been able with all the facts at his command to controvert, namely, the theory of the spontaneous development of cholera in Paraguay. E. M. E.

ART. XXII.—*On Nervous or Sick-Headache: its Varieties and Treatment.*

Two Lectures delivered at Addenbrooke's Hospital, Cambridge. By P. W.

LATHAM, M.D., F.R.C.P.; Physician to the Hospital, etc. 12mo. pp. 71. Cambridge: Deighton, Bell & Co., 1873.

IN the two lectures which are contained in this little volume Dr. Latham endeavours to demonstrate that the phenomena of the condition known as sick-headache or bilious headache may be produced by uncontrolled or disturbed action of the sympathetic nervous system. He was unaware when the first lecture was written that similar views had been held and enunciated by Du Bois Reymond, Möllendorff, and Wilks, and he, therefore, in the second lecture refers very fully to the respective views of these physicians. His theory may be briefly stated in his own language as follows:—

"If by fatigue, anxiety, or other depressing cause, the general tone of the body be lowered, and with it the inhibitory power of the cerebro-spinal over the sympathetic nervous system impaired, then that uncontrolled action or excitement of one or more portions of the latter takes place, causing contraction of the bloodvessels under the influence of the affected portions; that this excitement is followed by exhaustion or paralysis of the sympathetic, which is associated with dilatation of the vessel, and, if the cervical portion of the sympathetic be affected, with headache."

During the stage of excitement, or that in which the bloodvessels of the brain are contracted, we have, the author says, some marked premonitory symptoms, such as disturbances of vision, generally confined to one eye and accompanied by tingling in the extremities of the same side. If the attack is a slight one, scarcely any headache will succeed these phenomena, but in severe cases, on the other hand, the stage of passive dilatation follows so closely upon that of contraction that the premonitory symptoms may be entirely wanting. This disturbance of vision, which Dr. Latham seems to have met with more frequently than other observers, is very well described by Sir John Herschel, who gives the following account of it, in his *Familiar Lectures on Scientific Subjects*, as it occurred in his own person.

"I was sitting one morning very quietly at my breakfast-table, doing nothing and thinking of nothing, when I was startled by a singular shadowy appearance at the outside corner of the field of vision of the left eye. It gradually advanced into the field of view, and then appeared to be a pattern in straight-lined angular forms, very much in general aspect like the drawing of a fortifi-

cation, with salient and re-entering angles, bastions, and ravelins, with some suspicion of faint lines of colour between the dark lines."

In some other cases a most gorgeous colouring of these *bastions* has been described.

The author takes some pains to show that precisely similar phenomena are occasionally developed by remedies which are known to produce contraction of the minute arteries. Thus the experiments of Dr. Brunton prove that under the action of digitalis two kinds of derangement of sight were noticed, when the drug was administered in large doses. 1st. "A general mistiness of objects, such as is seen before fainting, and 2d, a large bright spot advancing before me, which sometimes resembled a ring showing prismatic colour faintly." The same appearances are described even more fully by Purkinje. Du Bois Reymond is the only author who has found during the stage of headache any contraction, or, in his own words, a tetanic condition of the muscular fibres of the arteries of the affected side of the head, or a tetanus of the cervical portion of the sympathetic of that side. To all other observers the carotid and temporal arteries of the painful side have appeared soft and relaxed.

In support of his theory that the headache depends upon the direct pressure of the enlarged vessels upon the brain, and that this enlargement is subsequent to a contraction, the author calls attention to the fact that while the premonitory symptoms of irritation are on one side of the body, the headache is on the other, which he thinks would not occur if the true pathology of the condition was neuralgia. Another fact, also sustaining his opinion, is that the headache is at once diminished when the carotid of the painful side is compressed.

The author devotes a few pages to the discussion of two of the theories which are advanced as to the nature of this disorder: the one that it is a neuralgia; the other that it depends upon gastric or hepatic derangement; neither of which he believes so fully explains all the phenomena attendant upon it as his own. In regard to treatment, he says this should vary according to the stage of the disease. When the patient is suffering from disturbed sensation, such means should be adopted as will increase the flow of blood to the head, and this can be best accomplished by posture and stimulants. The patient should lie down with his head as low as possible on the side opposite to that on which the glimmering has appeared. A glass of sherry or an appropriate dose of some one of the diffusible stimuli should be administered. During the stage of headache, if this be severe, absolute rest and quiet are enjoined. Where the exciting cause of the attack appears to be an error of diet, an emetic or purgative may relieve the symptoms. The author has also used, with advantage, hydrocyanic acid, chloroform, bromide of potassium, aromatic spirit of ammonia, and cold tea. The remedies which he recommends to be given during the intervals of the attacks are cod-liver oil, the bitter and ferruginous tonics, and strychnia. He has also used guarana, but has found it to be useful only when administered early in those cases in which the premonitory stage lasts for some little time. Where, on the other hand, the headache is developed suddenly, it is he thinks far less efficacious than many other medicines.

We have thus presented our readers as briefly as possible with the author's views in regard to the pathology and treatment of sick-headache, and it only remains for us to say that he sustains his theory with what seem to be fair and sound arguments. The book is illustrated with three plates, two coloured, taken from Dr. Airy's paper, in the *Philosophical Transactions*, "on a distinct form of Transient Hemiopsia," and the third showing the appearances seen by a person who had taken a large dose of digitalis.

J. H. H.

ART. XXIII.—*On a Hæmatozoon inhabiting Human Blood in its relation to Chyluria and other Diseases.* By T. R. LEWIS, M.B., Ass. Surgeon H. M. British Forces. 8vo. pp. 50. Calcutta, 1872.

It has long been known that certain worms, belonging to the Filaridæ, exist in the blood of dogs and other of the lower animals, though as far as we know no one has determined whence they come or whither they go, their origin or their destiny.

A disease which has been shrouded in mystery as to its cause and nature, although not infrequently recorded, is the so-called "chylous urine."

In March, 1870, Dr. Lewis discovered, whilst examining some of this "chylous urine," a hæmatoid worm in it, but carried his researches no further.

In July, 1872, whilst examining the blood of a patient suffering from diarrhœa, at the Medical College Hospital, Calcutta, he discovered in it worms of precisely the same character. To these worms, which were described in *The Lancet*, the name of *Filaria Sanguinis Hominis* has been given. The chief object of the present pamphlet is to show the connection of this worm with the disease known as chylous urine. The doctor has examined such urine associated with more or less marked hæmaturia in between 15 and 20 patients, and has found them in all cases in the excretion; in many if in not all the patients he has also detected them in the blood.

The details of several cases of this curious affection are given, but as it has never, at least that we know of, occurred in this country, it is sufficient here to refer the reader to the pamphlet itself, a memoir of 50 pages, illustrated with several wood-cuts of the hæmatozoon; the average diameter of this species of *Filaria* is that of a red corpuscle and its average length 46 times greater; *i. e.*, it is $\frac{1}{3500}$ of an inch one way by $\frac{1}{2}$, the other.

In regard to the number of these creatures that a man is capable of giving nourishment to, Dr. Lewis, in regard to one patient, arrived, by an apparently fair calculation, at the conclusion that he was foster-mother to a progeny of 140,000! In regard to the length of time that they may live, it was found in another case that they continued to exist for two years and a half without showing any tendency to develop beyond the usual stage, so long as they remained in the circulation. Their ultimate transformation was in nowise made out. In some instances they seemed to exist in large numbers in the blood without giving rise to any symptoms, the patients believing themselves to be in good health and showing no indications of disease.

H. C. W., JR.

ART. XXIV.—*An Introduction to the Study of Clinical Medicine; being a Guide to the Investigation of Disease. For the Use of Students.* By OCTAVIUS STURGES, M.D., Cantab; F.R.C.P., formerly Registrar of Medical Cases at St. George's Hospital. 12mo. pp. 127. Philadelphia: Henry C. Lea, 1873.

THE design of this little book is to aid those pupils, and, we think the author might have very properly added, recent graduates, who having been taught the principles of medicine and surgery by means of formal lectures, find themselves embarrassed, when called upon to investigate disease at the bedside.

In this country, especially, where didactic teaching, notwithstanding the improvements lately made in the courses of some of the more advanced of our medical colleges, largely predominates over clinical, and where the student is so rarely brought in actual contact with the patient, there are many who need just the kind of assistance at the beginning of their professional career which this book proposes to give. Dr. Sturges has not attempted to present to the profession a complete work on diagnosis similar to that of Dr. Da Costa, his object being simply to point out to students a method of interrogating patients, and has therefore arranged a series of tables which are suggestive of the questions which it is proper to ask. He does not attempt to specify what each symptom may denote, but, on the other hand, endeavours so to train the student that no symptom may escape his notice. In other words, the book is intended to take the place of a clinical teacher, to impress the value of signs which students are too apt to neglect, and to provide cautions against common errors and hasty conclusions. As it is intended to supplement the teaching of the lecture-room, the student is credited with knowing what he may reasonably be supposed to have learned there or from text-books. We therefore do not find the author rehearsing the elementary facts of practical medicine, such as the topography of the viscera or their morbid anatomy, or the tests employed in examining the secretions.

We think the author has done his work well, and have no doubt the book will be a useful guide to the large class for which it was written. In a few instances indeed, especially when discussing the physical signs of disease, he pushes his desire to secure simplicity to an unwarranted extent. For example, after saying in a foot-note that a multiplicity of names leads to confusion, he adds "the expressions 'wooden' and 'amphoric' and 'cracked-pot' and 'metallic' and the like, apt as some of them are, must always remain the exclusive property of those who recognize the resemblances which these words imply." Unquestionably nothing is to be gained by needlessly increasing the number of terms, but the physician who cannot distinguish the various sounds just mentioned, and to whom they convey no idea of the condition of the lungs, is hardly fitted, in our opinion, to be entrusted with the treatment of thoracic diseases.

H. H.

ART. XXV.—*The Cerebral Convolutions of Man, etc.* By ALEXANDER ECKER, Prof. of Anatomy and Comparative Anatomy, in the University of Freiburg, Baden. Translated by Robt. T. Edes, M. D. 8vo. pp. 87. New York: D. Appleton & Co., 1873.

WE are glad to see Ecker's well-known monograph in English dress. It is doubtless the most available work on the cerebral convolutions the physician possesses, and is worthy of the honour given it by Dr. Edes, in writing so good a translation.

The object of the work, we are informed by the author, is to place in the hands of practitioners materials which will make it possible for them to find their way easily in the apparent chaos of convolutions. The pages are illustrated by diagrammatic outlines elaborately indexed, which answer to the descriptions of the convolutions and sulci in the text.

The book is essentially one for reference—not only can the reader easily turn to any particular heading, but can at a glance acquaint himself with its synonymy—a no insignificant matter in studying a subject, which even yet is

without a fixed nomenclature. The single temper-provoking feature is the disposition of the figures. Why figure 4 should be placed on page 49, when it is so badly needed on page 21, we cannot understand.

The author has so explicitly stated the scope and object of the book—and that anatomists are awaiting in return clinical material, from which a more exact knowledge of the functions of the cerebral surface may arise, that it would be manifestly unfair to complain of the omissions, which will doubtless be observed by many readers. We are of the opinion that a closer relationship with the results of clinical study, even in its present imperfect condition, would have been a very desirable addition. May we entertain the hope that, in the event of a second edition being called for, this want may be supplied. H. A.

ART. XXVI.—*Die Ohrenheilkunde der letzten 50 Jahre.* Von Dr. W. KRAMER, Geheimer Sanitätsrath. Zur Erinnerung an seine medizinisch-chirurgische Doktor Promotion, im Jahre 1823. 8vo. pp. 77. Berlin, 1873.

The Aural Surgery of the last fifty years. By Dr. W. KRAMER. Commemorative of his promotion to the Doctorate of Medicine and Surgery in 1823. Berlin, 1873.

ANY work which professed to contain the experience derived from the pursuit of an important branch of medicine or surgery for two generations, would claim our attention, but our interest is heightened when an authority so distinguished as Dr. Kramer lays before the profession the book the title of which stands at the head of this notice. And yet frankness demands the confession of our disappointment after its perusal.

That portion of the pamphlet which is devoted to a review of the past fifty years in aural surgery may be considered as an exhortation to establish a more thorough pathological anatomy of the ear, the importance of which no one doubts; but this *grain* of good advice is lost in the *chaff* of personal vituperation of all the prominent aurists of Germany, England, and America.

An otological career of fifty years, even as brilliant as that of the celebrated Kramer, will not warrant the utter rejection of the scientific investigations of Helmholtz, v. Troeltsch, Schwartze, Politzer, Voltolini, Gruber, Weber, Moos, Knapp, and Wreden, nor of the "host of other living aurists."

It is with much greater satisfaction we turn to the Appendix of this little volume, where the author has presented a series of cases illustrating the cause, treatment, and cure of many forms of deafness and tinnitus aurium. The chief cause of tinnitus in the cases under consideration was, according to the author, submucous exudation in the Eustachian tubes. The deafness in each case appeared to depend on the same cause. The treatment consists in gentle dilatation of the Eustachian tube by means of catgut bougies, $\frac{1}{8}$ mm. in diameter.

The bougie is to be inserted as often as twice or three times weekly, in those cases where speedy relief has been followed by a quick relapse. In other cases the insertion of a bougie once a week has been sufficient to allay the tinnitus and improve the hearing. In both instances the entire treatment has extended over a period of one to four months. In addition to the insertion of bougies a few drops of olive oil, or a solution of sulphate of atropia in distilled water, (0.12 to 15.0) are to be introduced into the Eustachian tube, either by anointing the bougie or by inflation.

Usually relief of the tinnitus is accompanied by improvement in hearing, in fact, the former rarely occurs without the latter, although the author calls our attention to the fact, that in five of the thirteen cases recited, the tinnitus attendant upon submucous exudation in the Eustachian tubes not unfrequently entirely ceases, without a corresponding relief in the hardness of hearing. Therefore, as the author says, the entire independence of both forms of disease is irrefutably shown, although each depends upon the same fundamental affection, and that is, exclusively, submucous exudation in the Eustachian tubes.

C. H. B.

ART. XXVII.—*Fractures of the Elbow-joint.* An Essay to which was awarded the second prize of the Boylston Medical Society, for 1873. By WALTER ELA. 8vo. pp. 57. Cambridge: Welch, Bigelow & Co., 1873.

THIS is a very well written essay, and one which shows that the author (who we understand is a second year's student in the Harvard Medical School) possesses good judgment in using, as well as industry in collecting, his materials—two qualities which unfortunately do not always go together. The most interesting part of the essay is, perhaps, that devoted to the subject of fracture of the coronoid process of the ulna; eleven cases are mentioned in which it was believed by the respective observers that this rare form of injury had occurred, but in which the diagnosis was not verified by dissection; while to the list of four specimens referred to by Prof. Hamilton three more are added, one now first described by the author himself, one referred to in Holmes's System of Surgery, and one described and figured by Bryant.

The only thing which seems to us objectionable in this essay, is the author's recommendation that in cases of injury of the elbow, anæsthesia should invariably be employed as an aid to diagnosis. This we consider quite unnecessary, and therefore undesirable.

The author's case of fractured coronoid process (complicated with an impacted fracture of the neck of the radius) is given as an appendix, and the appearances of the specimen are shown by means of a well-executed "alber-type."

J. A., JR.

ART. XXVIII.—*Clinical Lectures on Various Important Diseases. Being a Collection of the Clinical Lectures Delivered in the Medical Wards of Mercy Hospital, Chicago.* By NATHAN S. DAVIS, A.M., M.D., Professor of Principles and Practice of Medicine and Clinical Medicine in Chicago Medical College. Edited by Frank H. Davis, M.D. 12mo., pp. 263. Chicago: J. J. Spalding & Co., 1873.

THE favour with which these lectures were received upon their original appearance in the *Chicago Medical Examiner*, and the frequent application for numbers of the journal that could not be supplied, Professor Davis's son states has induced him to collect and issue them in the present form. It is, we think, to be regretted that before doing so he did not subject these lectures to a more critical examination; for although when delivered at the bedside their deficiencies may have escaped detection by the class in attendance upon the course, and they are not out of place in the columns of a medical periodical,

they are not sufficiently full to justify their publication in a more permanent form. There have been so many admirable clinical lectures published recently that these seem by comparison to be rather meagre, to be in fact mere reports of cases filled in with outline sketches of disease.

Professor Davis, while manifesting some acquaintance with the works of contemporary authors, does not seem to have accepted fully the recent advances made in therapeutics. Although cautioning his students against the excessive use of drugs, he is not himself by any means free from the reproach of occasionally giving them too liberally in cases where a knowledge of the history of the disease would seem to indicate that the patient's best chance of recovery depended upon the adoption of a non-perturbating course of treatment. The editor seems to deprecate criticism when he says that "the fact that the lectures here collected were not given in one consecutive course and reported by one amanuensis, but were delivered as parts of several annual courses in the hospital wards, will explain any want of uniformity that may be observed in the manner of writing the prescriptions or in the naming of medicines." Inasmuch as the manner of writing the prescriptions seems to have attracted the editor's attention, it is strange that he has not taken sufficient care to prevent the mingling of two languages in the same formula.

There are a few typographical errors and occasionally a mistake in construction which the editor would have done well to correct, but in other respects the way in which the book has been issued reflects credit upon the publishers.

J. H. H.

ART. XXIX.—*Fever and Cholera from a New Point of View.* By ALEXANDER SMITH, M.D. Edin., Staff Surgeon-Major; Statistical Officer to the Inspector-General of Hospitals, British Forces in India. (For private circulation.) 12mo., pp. 301. Calcutta: Wm. Smith, 1873.

IN a work which we noticed in the last number of this Journal, Mr. R. T. Lyons made an attempt to prove that the disease generally known as relapsing fever is only a form of malarial disease, modified by circumstances. Dr. Smith, the writer of the book, the title of which heads this notice, like the author to whom we have just alluded, has been for many years attached in a medical capacity to the British forces in India, and has become imbued with the same opinions. He, however, goes further than Mr. Lyons, for while the latter is unable to see any essential difference between the diseases named, the former comprehends all the non-contagious fevers in one class, which he stretches so far as to include cholera. In fact, his object in writing appears to have been to demonstrate "that cholera is simply the highest expression of form which this description of disease attains." In his pathology all these diseases originate in a morbid impression made upon the sympathetic nervous system, which gives rise to paralysis of the vaso-motor nerves, and he therefore regards the difference between cholera and simple continued fever as one only of degree; the severity of the former being due to the greater violence with which the exciting cause acts.

We cannot say that we have found the arguments by which the author endeavours to sustain his views very convincing, and we shall not attempt to make an analysis of them, especially since in doing so we should be obliged to repeat much that was said in our notice of Mr. Lyons's work. We can scarcely

be wrong in supposing that Dr. Smith and Mr. Lyons are very fair representatives of a large class, and that the views which they hold are therefore more popular in India than elsewhere. While willing to concede to them, and to other army surgeons in the British possessions in the East, the advantage derived from the opportunity which their position gives them, for comparing the phenomena of disease in different countries, we do not think they will be able to convince intelligent physicians of the complete identity of enteric fever with remittent fever, and of both these with cholera.

Entertaining the opinions that he does, it is not surprising that Dr. Smith recommends the exhibition of quinia in cholera, which should be given hypodermically whenever the stomach is too irritable to retain it. J. H. H.

ART. XXX.—*As Formações e Transformações dos Animaes Estudo sobre o Desenvolvimento normal, teratologico, e pathologico, Fundado sobre a Embryogenia comparada, a Physiologia, a Anatomia Pathologica, a Histogenia, e a Paleontologia.* Por JOSÉ JOAQUIN da SILVA AMADO, Premiado pela escola medico-cirurgica de Lisboa em 1860, '61, '63, e '64; Preparador e Conservador do Museu d'Anatomia da mesma escola; ex-cirurgiao do banco do hospital de S. José. *Primeira Parte: Desenvolvimento normal dos animaes da fauna actual. Com duas estampas.* Lisboa: Lallemand Frères, 1872. 8vo. pp. 240.

The Formations and Transformations of Animals; a Study of their Normal, Teratological, and Pathological Development, based on comparative Embryology, Physiology, Pathological Anatomy, Histology, and Paleontology. By JOSÉ JOAQUIN da SILVA AMADO, Rewarded by the Medico-Chirurgical School of Lisbon in 1860, '61, '63, and '64; Preparer and Curator of the Anatomical Museum of that School, etc. etc. *First Part: Normal Development of Animals of the existing Fauna, with two plates.* 8vo. pp. 240. Lisbon, 1872.

THIS volume is a well-written compilation of what has been published on animal development in German, French, English, and other languages. The author seems to have sought information from all authorities and produced a learned work. The bibliography of this volume occupies more than thirteen of the two hundred and forty pages contained in it. W. S. W. R.

ART. XXXI.—*Clinical Reports from Private Practice.* By JOHN HERBERT CLAIBORNE, A.M., M.D., one of the Vice-Presidents of the Medical Society of Virginia, etc. 8vo., pp. 424. Petersburg, Va. Jos. Van Holt Nash, 1873.

THE patient of a physician whose *clientèle* lies among the better classes of the community, presents peculiarities of constitution and temperaments not often encountered in the occupant of a hospital bed, which must, therefore, be met by some modification of the treatment adapted for the latter. We are not, however, prepared to admit that there are any set of people, no matter what their antecedents or present condition may be, in whom it is justifiable to

push depletion to the extent Dr. Claiborne recommends it. Among the cases recorded in his book, is one of a woman in puerperal convulsions, from whom he took by venesection one hundred and twelve ounces of blood in forty-eight hours, to which must be added the amount removed by leeches and cups, and that lost from the uterus during parturition, which he estimates at twenty-eight ounces. Well may he explain—

"This practice seems to border on the heroic!" And yet he adds: "Nineteen years have elapsed since this case was placed on record; time may palliate the offence with some. But I do not offer it as an apology—nor do I put up any defence for the treatment. If success were the test of merit always, I could point to the recovery of my patient as the proof of the correctness of the practice. But as this is not invariably so, I wish to write that now, to-day, claiming to live in the full light that has flooded physic under the new régime, and after the experience of so many years, I see nothing which would make me abate one jot of confidence which I placed in the correctness of the treatment then."

The above extract conveys, we think, not an unfair idea of the author's style, as well as of his practice. The reader will, therefore, not be surprised to hear that free bleeding is recommended in all the acute inflammations, and that this is notably true in the case of pneumonia. Although he seems to be aware that success has attended the practice of Bennett and others, who have treated the disease by restoratives and the milder antiphlogistic remedies, he sees no reason why we should abandon the use of the lancet and of mercury, which he therefore uses in all forms of pneumonia, excepting in that form which depends upon malarial poisoning and in which he recommends anteperiodic doses of quinia. The notes of six cases of the disease are given, in one of which death occurred, but whether this fairly represents the results of his practice we are left in doubt.

A physician, whose opportunities for observing disease have been so extensive as Dr. Claiborne's appear to have been, must of necessity, in the course of his practice, meet with cases of interest, and reports of such cases will be found scattered throughout the volume, but they are so loosely strung together, and in many instances so meagre in details, that we fear the book will have very little value for the student; especially since the author's pathology as well as his therapeutics is a little antiquated. Among the minor defects of the book may be mentioned numerous errors in the spelling of proper names and occasional mistakes in the writing of prescriptions, which a little care in the reading of the proofs would have prevented.

It is pleasant to be able to say, in concluding this notice, that the manner in which the book has been issued from the press, reflects the greatest credit upon the printer and publisher.

J. H. H.

ART. XXXII.—*Chemistry: General, Medical, and Pharmaceutical, including the Chemistry of the United States Pharmacopœia.* By JOHN ATTFIELD, Ph. D., F.C.S. Fifth edition, revised from the fourth (English) edition by the Author. 8vo. pp. 606. Philadelphia: Henry C. Lea, 1873.

THE former edition of this work having met with the approval of those for whom it was especially intended, the author has been induced to undertake a full revision and introduce all the new matter rendered necessary by the last

revision of the United States Pharmacopœia. The increase in the size of the volume of over fifty pages is made up by new matter and extensive additions to the index. The chapters on the general principles of Chemical Philosophy have been remodelled, and in every part there are evidences of addition and alteration which, though in themselves slight, add to the already comprehensive character of the work. Of these the most extensive are the new processes for the estimation of the alkaloids in the cinchona barks. We would again commend it to the students of medicine and of pharmacy as a useful guide in their practical studies.

R. B.

ART. XXXIII.—*The Diseases of the Prostate, their Pathology and Treatment ; comprising the Jacksonian Prize Essay for the year 1860.* By Sir HENRY THOMPSON, F.R.C.S., etc. Fourth edition. 8vo. pp. xxiv., 355. Philadelphia : Henry C. Lea, 1873.

It is but a little more than five years since we were called upon to note the appearance of the *third* edition of this excellent work, and, as might be supposed, comparatively few additions have been found necessary in the present issue. Indeed the book, though in larger type, contains nine pages less than in its previous shape, and while a few paragraphs have been introduced, many more have been omitted. The changes now made are such as are justified by the author's wider experience in the treatment of prostatic affections, and consist chiefly in the substitution of modes of practice which he has himself found useful, for such as were previously recommended on the authority of others.

Of these changes the more important are the following : Local treatment is no longer recommended in cases of chronic prostatitis ; an early incision is advised in case of a prostatic abscess pointing in the rectum or in the perineum ; and the *sonde coudée*, or "elbowed catheter" (flexible), is mentioned as a valuable instrument in cases of prostatic enlargement. The author speaks less favourably than before of the use of the decoction of senega and of benzoic acid in the treatment of chronic cystitis ; and the hot bath is reduced to a place of secondary importance in the management of urinary retention from enlarged prostate, while the catheter is declared to be "in almost all cases . . . the first and only remedy to be employed." For cases in which catheterization cannot be accomplished, the operation of perforating the prostate (which, in 1868, was given the first place, and for performing which the author recommended an instrument of his own devising) is now characterized as a "rough proceeding," which "must be considered as a matter of history." Brander's operation (puncturing the bladder through the symphysis pubis), which was formerly well spoken of, is now condemned ; as is Mercier's procedure of incising the so-called "bar at the neck of the bladder." The directions for treating cases of vesical calculus, when complicated with enlarged prostate, are modified in accordance with the author's latest views, as promulgated in his *Clinical Lectures* and in his *Practical Lithotomy and Lithotripsy*.

Altogether the new edition of Sir Henry Thompson's work will fully maintain its reputation, and it is still, as it has been repeatedly called in these pages, "by far the best . . . in any language on the important subjects of which it treats."

J. A., JR.

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physical Nature of the Coagulation of the Blood.*—Dr. ALFRED HUTCHINSON SMEE, after briefly reviewing (*Journ. Anat. and Phys.*, June, 1873) the various theories which have been held at different times in regard to the vexed question as to the cause of the coagulation of blood fibrine, gives the views which have been enforced upon his mind by direct experiment, and also by the behaviour of colloidal substances analogous to fibrine.

He summarizes his conclusions as follows: 1st. That the coagulation of fibrine is a physical act, and cannot be considered to be in any way identified with a vital property such as the contraction of muscular fibre. 2d. The coagulation of fibrine depends upon and is regulated by the same laws which cause all soluble colloid substances, whether organic or inorganic, to become pectorous. 3d. That the soluble or fluid form of fibrine ought to be regarded as its allotropic form; and, as in the case of its colloidal analogue, silicic acid, its presence in the blood in the fluid condition depends upon the physical conditions under which fibrine is found in the living body.

2. *Source of Nerve Force.*—Mr. A. H. GARROD presents (*Journ. Anat. and Phys.*, June, 1873) a theory of the mechanism of nerve force, which he thus summarizes:—

The afferent nerves are the conductors to the nerve centres of the electric current which is generated by the contact of their peripheral ends with the tissues of the cooled skin, which they supply. The brain is the largest of the centres towards which the nerve current is directed, the other ganglia forming the smaller. Through these centres the currents, as through an elaborate commutator, are split up or concentrated in a manner not understood as yet, to be directed along the efferent nerves, which are always so situated as to be beyond the reach of external cooling influences. Where an organ acts in any way automatically, it generally has centres of its own, of a size varying in degree according to its automaticity, and these minor centres are only to a certain extent subject to the influence of the brain.

As in the working of the electric telegraph, no return or second special conductor is required to carry back the current to the point from which it started; for where an efferent nerve terminates in a muscle, it loses its insulating covering, and so is put into indirect communication with the peripheral sentient nerves through the intervention of the mass of body tissue generally, which, though its resistance is much greater, offers an incomparably larger mass to be traversed by the current.

3. *Physiology of the Secretion of Bile.*—A very extensive series of investigations upon the physiology of the secretion of bile has recently been conducted by Dr. RÖHRIG, of Kreuznach, in the Pathological Institute at Vienna. Our knowledge of this subject has been hitherto very limited, and probably inaccurate, and had reference rather to the functions of bile, and especially to its digestive properties, than to its secretion and the influence of the blood and nervous system upon it. Whatever may be the use of the bile in the alimentary tract, practical therapists are generally agreed that the liver can be “unloaded,” and the amount of bile secreted artificially increased, and that there are certain drugs which so far possess this power as to deserve the name of cholagogues. Röhrig's investigations were made solely upon the discharge of bile—in respect of the amount of the secretion in narcotized animals; the effect upon it of alterations in the vascular supply within the liver; irritation of the different parts of the alimentary tract; the presence of fluid in the intestines; the administration of certain drugs, especially purgatives; as well as the influence of various conditions of the nervous system. The results obtained by Röhrig, after experiments upon hundreds of animals, are detailed in Stricker's *Jahrbuch*, 1873, part ii. We will here notice the most important of them.

The mode of experimenting was simple:—A dog or rabbit was narcotized with curare, and an incision made in the abdominal wall, from the ensiform cartilage to near the umbilicus; the under surface of the liver was then brought to the opening by the hand, and a glass tube with a pointed vertical arm tied into the bile-duct, while the cystic duct was mechanically closed. The bile, as secreted, escaped drop by drop from the capillary end of the tube, and the rate of secretion was estimated by the number of drops per minute. It was first determined that after the operation, and under circumstances otherwise normal, the flow of bile steadily diminishes.

There could be little doubt, *à priori*, that the secretion would be affected in amount by alteration of the blood-supply to the liver, and such was found to be the case. Compression of the trunk of the vena portæ markedly diminished the secretion, but did not completely suppress it; obstruction of the hepatic artery alone diminished the rate of flow slightly; while complete arrest of the hepatic circulation by ligature of both these vessels was followed by entire cessation of the biliary secretion and speedy death. Diminution of the rate of flow was likewise the result of ligature of the ascending cava near the heart, and of ligature of the aorta above the diaphragm; while ligature of the latter vessel below the celiac axis caused a slight increase in the amount of bile discharged. These last two results are very significant when studied together. Since ligature of the ascending cava in the thorax, and of the aorta below the origin of the hepatic artery have an exactly opposite effect upon the amount of bile secreted, and an exactly similar effect upon the hepatic capillaries—namely, a rise of the pressure within them, it follows that the amount of bile does not depend alone on the height of the blood-pressure in the liver. The influence of the amount of blood upon the secretion is further seen after section of the splanchnics and after section of the cervical portion of the spinal cord; both operations being followed by increased flow of bile. On the contrary, irritation of the cervical cord (reflexly through a sensory nerve) diminishes the flow. No noteworthy effect was observed by Röhrig of irritation or section of the vagi sympathetici. Anæmia induced by phlebotomy and injection of warm water into the circulation reduced the secretion in amount until it finally ceased.

More interesting to the practical physician are the results observed by Röhrig of the introduction of different substances into the alimentary canal. Chyme injected into the gut markedly increased the amount of discharge—a result exactly in agreement with those of former experiments on the condition of the liver during digestion. Similar injections of tepid water and bile caused a temporary increase of the discharge. The most striking results were obtained after the administration of several of the so-called purgatives, and are worthy of our careful attention, even should the action of the various drugs be different in man. The substances employed were croton oil, colocynth, jalap, aloes, rhubarb, senna, sulphate of magnesia, calomel, and castor oil; and the chola-

gogue power of these was found to diminish very much in the order in which they have been enumerated. Croton oil decidedly induced the most abundant flow of bile; castor oil had the least action of all. In all the cases the increased biliary flow was preceded by hyperæmia of the intestine, and followed—never preceded—by diarrhœa. Röhrig concludes that “these substances undoubtedly excite the production of bile.” Less is said of the effects of mercury upon the secretion than might have been desired. It was found that large doses of calomel (twenty grains for a dog) are seldom able to excite flow of bile, if it is quite stopped previously; but if the secretion is simply diminished, it may be increased by the administration of the drug. The greatest action was observed about three hours after administration; it then speedily ceases. There is almost no doubt that the effect of purgatives upon the liver is not to be referred to their immediate action upon the intestine, but to their absorption into the circulation. This is almost proved by two experiments of Röhrig. On the one hand, he found that irritation of any portion of the alimentary canal from the mouth to the anus (including the duodenum), or of the peritoneum, either by mechanical, electrical, or chemical stimuli, had apparently no certain effect upon the secretion of bile. Even when the electrodes were sunk deeply into the substance of the liver, no effect of galvanism was observed. On the other hand, the injection of infusions of senna and rhubarb into the veins immediately and greatly increased the amount of bile secreted.

A more difficult investigation was that of the effect upon the secretion of bile of interference with respiration, and the results obtained were somewhat variable. In many instances there was at first a decided diminution of the quantity of bile, and this was found to correspond with a fall of the general blood-pressure, and was believed to be probably due to it. These phenomena were soon replaced by an increase of the quantity of bile secreted and diminution of the blood-pressure, to which it is probably to be referred. And, finally, there supervened a decline of the discharge and a venous condition of the blood in the body, which also probably stand to each other in the relation of effect and cause.

Röhrig investigated the action of four other drugs upon the liver, as far as it is a bile-secreting gland—namely, strychnia, acetate of lead, carbonate of soda, and opium. Strychnia was found to diminish the secretion; a result which was to be expected in view of the last-mentioned experiment, for strychnia is known to raise the blood-pressure. Acetate of lead was tried, on account of its recognized action on the bloodvessels; when injected either into the intestine or into the veins it diminished the secretion. A similar result was observed after the administration of a solution of carbonate of soda in the same way. Opium increases the secretion of bile; it would appear, therefore, that opium constipates not by arresting the alimentary secretions, but by its action upon the muscular coat of the intestines. Finally, the experimenter confirms Schmulewitsch's observation, that defibrinated blood injected into the portal vein immediately after the complete separation of the liver from the body, causes the secretion of some drops of bile, while a similar injection of salt solution has no effect. The conclusions at which Röhrig arrived are thus briefly stated by himself:—“From all the experiments which I have described, it appears to result that the quantity of fluid which escapes from the biliary vessels of curarized dogs and rabbits is dependent on (1) the vascularity of the abdominal viscera, and (2) the quality of the blood.”—*Med. Times and Gaz.*, July 19, 1873.

4. *The Physiology of Menstruation.*—It is probably the general belief among physiologists and the profession in general that during menstruation one or more ova reach the uterus, and there either become attached to the surface of the mucous membrane or disappear, according as fecundation has occurred or not. If an embryo is developed from the ovum it will correspond with the menstruation immediately preceding—or, in other words, pregnancy will date from the menstruation which last occurred. Dr. KUNDRAT, of Vienna (Rokitansky's senior Assistant), has just published an account of certain researches of his upon the anatomical condition of the uterine mucous membrane before,

during, and after menstruation, which throws very grave doubts upon the correctness of this belief (*Medizinische Jahrbücher*, 1873, vol. ii., p. 135). Kundrat's investigations are all the more worthy of attention that they were of a purely anatomical nature. He examined the mucous membrane of the human uterus in the intervals of menstruation, immediately before the hemorrhage, during the hemorrhage, and again after it had ceased, and the results which he obtained are certainly in favour of the considerable modifications which he would introduce into the physiology of ovulation and menstruation as presently received. The mucous membrane of the human uterus in the "state of rest" has certain peculiarities, as pointed out by the author. There is no submucous tissue, and the mucosa comes into immediate union with the muscular layer. Its matrix is peculiarly rich in round or spindle-shaped cells. The glands, which it is known to possess in great numbers, are lined, like the free mucous surface, with ciliated epithelium. This condition is markedly altered at the monthly period of uterine activity. The mucous membrane is swollen, thick, loose, and almost diffuent, covered with a whitish or bloody mucus, finely injected at spots, and in many cases uniformly coloured of a deep red. A microscopical examination reveals increased abundance of the cellular matrix, especially at the surface, with great elongation and dilatation of the glands. So far there is nothing specially original in the description given by Kundrat, but new and important facts remain to be enumerated. He discovered, in the first place, that the condition of uterus just described probably precedes the occurrence of the discharge of the ovum and—what is perhaps more striking—the menstrual flow by "several days." The author considers that this observation goes far to prove that the uterus is prepared for the reception of the ovum a certain time before the rupture of the Graafian vesicle. Again, while the rough characters remain as described during the menstrual flow, with the addition of the oozing from the surface, and for a short time after it has ceased, careful examination reveals a very remarkable change in the microscopic appearances. The cells of the stroma and the vessels, as well as of the epithelium of the glands and surface, are dull in appearance and filled with fat granules. The question occurs, What is the relation of the hemorrhage to this fatty degeneration of the cells and vessels? Kundrat replies by stating his belief that the hemorrhage does not cause the fatty change, but is caused by it. He refers to the fatty change which is known to occur at the end of pregnancy, and would consider the two phenomena homologous. He also points out the improbability of the cause of the flow being found in congestion, as this occurs frequently without hemorrhage. One fact he has ascertained, is, that the fatty change is most abundant at the surface of the mucosa, where the bleeding takes place. The anatomical sequence of events, therefore, according to Kundrat, at the monthly period of uterine activity is—swelling of the mucosa, fatty change in the cells and vessels, vascular rupture, and hemorrhage. With the blood much altered epithelium is thrown off, but not the whole mucosa, as some believe. It is a short time after the cessation of the menses before the mucous membrane has returned to its "condition of rest."

In inquiring now into the physiological relations of the three processes—the swelling of the mucosa, the discharge of the ovum, and the flow of menstrual blood—Kundrat insists strongly upon the ascertained chronology of the events. The first mentioned of the three is the first in order of time, and it is almost certainly the preparation for the reception of the ovum. It is much more improbable that the uterus during the menstrual flow is in a condition suitable for this function—with a retrogressive process going on in the mucosa, its vessels ruptured, and its surface discharging blood. It is even more improbable that the mucosa in this state of degeneration will on the descent of an ovum take on a totally opposite process, and become highly developed. The type of the impregnated uterus is seen in the active uterus when the mucosa is swollen and menstruation has not yet commenced. If the bleeding does commence, it is a sign that the ovum has perished, and that the mucosa is returning to its state of rest. Thus we arrive at the highly important conclusion that a developing ovum, or growing embryo, belongs not to a menstrual period just past, but to one just prevented by fecundation. Löwenhorst has already expressed

this opinion from a consideration of the clinical aspects of menstruation, and we believe that the method of calculating the duration of pregnancy suggested by the new facts is not altogether a new one among the gynaecologists and practitioners of this country.—*Med. Times and Gaz.*, July 26, 1873.

5. *New Sign of Death.*—Dr. LIERSCH states it is well known that when the cornea of a living eye is punctured to evacuate the aqueous humour the pupil always contracts; this he asserts does not occur when the puncture is made in the eye of a dead person. He points this out as a simple and certain means of diagnosis of apparent from real death.—*Revue des Sciences Médicales*, July, 1873, from *Vierteljahrs f. gericht Med.*, April, 1873.

6. *Influence of Changes in the Barometric Pressure on the Phenomena of Life.*—Some time ago M. BERT showed that the evil results which immediately follow the too rapid passage of men (*e. g.*, in divers), ascending rapidly after submersion at a considerable depth, or of animals from compressed air at a pressure of several atmospheres to the normal pressure, are due to the formation of bubbles of gas in the blood. These are due to the nitrogen which was dissolved in the blood during the continuance of the pressure returning to the gaseous condition when the pressure is removed. The bubbles of gas arrest the circulation in various parts of the body, and especially in the lumbar portion of the spinal cord, where they give rise to paraplegia or softening. When they occur in large quantity they obstruct the pulmonary circulation, distend the heart, and cause death more or less rapidly. The danger arising to different animals from sudden removal of pressure varies with the species, and even with the individual. It seems to increase with the size; and, whereas a rapid change from 11 atmospheres to one is requisite to produce death in sparrows, a change from 9 atmospheres will cause it in cats and rabbits, from 7 or 8 in dogs, and in man from 5 atmospheres. Paraplegia generally occurs in dogs after a change from 7, and death from $7\frac{1}{2}$ atmospheres. In seeking an explanation of these differences, M. Bert found that the arterial blood of a dog breathing air at the normal pressure is almost saturated with nitrogen at that pressure. Blood collected over mercury from a dog exposed to an increasing pressure begins to disengage bubbles of nitrogen when the pressure of the air which it respire has attained 3 atmospheres, but no bad effects appear till the pressure has been carried to 7 atmospheres. There is, therefore, a time after the animals have been exposed to pressures varying from 3 to 7 atmospheres, when the blood contains small bubbles of gas, although the animals do not seem to suffer. The reason of this is, that the bubbles are so extremely small that they pass through the capillaries without causing any obstruction, and gradually disappear. During this time, however, the animal is in great danger; and, if the bubbles should happen to aggregate and obstruct some of the vessels, accidents will occur. Thus it happens that some divers are paralyzed, or even killed, by diminutions of pressure which do not affect others.

While he was seeking to investigate this problem still further, M. Bert's apparatus unfortunately exploded, and he was thus deprived, for the present, of the means of prosecuting his researches. At the time when the explosion took place, a dog was contained in the apparatus, and subjected to a pressure of $9\frac{1}{2}$ atmospheres. The dog seemed well during the continuance of the pressure, but, when the apparatus burst, it died instantaneously. Not only were all the bloodvessels filled with gas, but the abdominal walls were distended with it, and there was general emphysema of the subcutaneous and intercellular connective tissue. This shows that the gas may become stored up in the other fluids of the body, as well as the blood; and the reason why the author has not noticed this before is, that in all his other experiments the pressure has been diminished too gradually. He considers that the horrible itching, to which divers give the name of fleas, and the muscular swellings which they call *mouton*, are due to a slight gaseous infiltration of the cellular tissue. The unfortunate destruction of his apparatus prevents M. Bert at present from pursuing his studies regarding the best means of preventing the occurrence of accidents

from the diminution of atmospheric pressure. He has already, however, discovered some very important practical rules. In order to prevent accidents, the pressure must be diminished very circumspectly. If it have reached 9 or 10 atmospheres, at least 12 minutes per atmosphere must be allowed for the removal of the pressure, in order to avoid all danger. It seems better to diminish the pressure rather quickly, by 1 or 2 atmospheres at a time, and then to leave it constant for some time, than to diminish it more slowly and constantly.

When accidents have occurred, and paralysis has taken place, and death is imminent, the author thinks the best thing to do is to increase the pressure at once, so that the gas which has become free in the blood may at once be re-dissolved. His apparatus has not permitted him to increase the pressure with sufficient rapidity to obtain successful results with animals; but in the case of divers it can be done with the greatest ease by making them descend again to a sufficient depth. Although M. Bert has not succeeded in removing the bubbles of nitrogen gas from the blood of animals in this manner, he has managed to do it by making them inhale oxygen. The nitrogen then diffuses rapidly from the blood as it circulates in the pulmonary vessels into the oxygen with which the lungs are filled. When a dog, in whose heart a gurgling sound was heard, and whose jugular vein was distended with gas, was made to inhale oxygen, the distension of the vein very quickly disappeared, the cardiac sounds became normal, the respiration became regular, and the rapidly impending death was averted. After several hours, however, paralysis occurred, and this was seen on post-mortem examination to be due to minute bubbles of gas in the small vessels of the nerve-centres, which has caused local arrest of the circulation. In this manner they had both destroyed the vitality of the nerve-centres, and at the same time prevented their own removal, for free gas had entirely disappeared from the blood in the general circulation. The inhalation of oxygen, however, prevents immediate death, and it may be employed to preserve life till the atmospheric pressure can again be raised sufficiently to induce the more or less complete reabsorption of the bubbles of gas, and thus re-establish the circulation. When this is once effected, all further danger may be avoided by simply diminishing the pressure again very gradually. M. Bert advises that all divers and workmen who are exposed to danger from sudden diminution in atmospheric pressure should inhale oxygen whenever they feel, after ascending, any uneasiness which may occasion fears of something serious. After inhalation, the atmospheric pressure may be again raised by descending, if it be thought advisable. The author considers that the same treatment might be successfully employed in accidents arising from the introduction of air into veins.—*London Med. Record*, June 18, from *Comptes Rendus*, March 3, 1873.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

7. *Constitution and Action of Croton-Chloral Hydrate*.—Dr. OSCAR LIEBREICH gave an account of the action of this substance, comparing it with chloral hydrate, and pointing out some of the conditions indicating its use. Its action differed from that of chloral hydrate in that, while it produced sleep, it did not affect muscular tone or interfere with circulation or respiration. Its use was indicated where chloral hydrate was inapplicable on account of heart-disease; and in cases of neuralgia affecting the trigeminal nerve. Where large doses of chloral were necessary to procure sleep, Dr. Liebreich recommended the addition of some croton-chloral.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

8. *Local Applications of Chloral*.—Chloral, besides its hypnotic properties,

seems to possess an antiputrid action. Either the hydrate of chloral, or what is called metachloral, may be used. The latter, according to Dumas, is prepared by placing in a bottle with an emery stopper some chloral and five or six times its weight of sulphuric acid. The next day the chloral is transformed into metachloral, which must be well washed with water to remove the sulphuric acid. It is a coarse white powder, smelling strongly of chloral, hardly soluble even in boiling water, and distilling between 150° and 200° C. without melting. Regnault has shown that it is similar in composition to chloral, and its formula is $C_4HCl_3O_2$, being simply an isomeric modification of chloral. Dr. Dujardin-Beaumetz, of Paris, has lately experimented on the local application of chloral as a caustic or modifying agent and a local anæsthetic. It may be applied in substance, which mode is rather difficult, or in solution of different strength—namely, one or two per cent. in water or glycerine. Metachloral is applied in powder upon foul wounds, replacing advantageously iodoform, the smell of which is so disagreeable. Cases are given where the application of chloral has been of much use in gangrene, phagedæna, rodent ulcers, lardaceous ulcerations, certain diseases of the skin, lupus, and for modifying the cavities of abscesses, etc. It is of much value in relieving the pain of cancerous ulcerations; and, as chloral possesses the property of preventing decomposition of the urine, Dr. Beaumetz thinks that in certain diseases of the bladder it may be usefully injected into that viscus.—*Lancet*, Aug. 30, 1873.

9. *Therapeutical Value of Phosphorus*.—In an interesting paper on the physiological action and therapeutic effects of phosphorus, M. Gubler states that phosphorus is a diffusible stimulant of great energy and of dangerous activity. It should therefore only be prescribed with the greatest possible caution, and certain contra-indications may in the first instance be laid down. Thus it should not be used in any affection characterized by nervous, circulatory, or trophic excitation, as in tonic and clonic convulsions, contractions, neuroses having a hypersthenic origin, diffuse peri-encephalitis with general paralysis, phlegmasiæ of all forms, fevers of every kind, exanthematous affections, etc. The indications for its use are the existence of disease unaccompanied by inflammation, fever, and nervous excitation, and especially in such cases as are characterized by depression of the circulation, either local or general, diminished power of generating heat, exhaustion or local asthenia, with paralysis of sensation and movement. Hence its value in cachectic states consecutive to long and exhausting diseases, marsh fevers, protracted convalescence, tabes dorsalis, paralyzes of old date, and of cerebral, medullary, or peripheral origin, when there are no signs of irritation; in hemiplegia, paraplegia, amaurosis, and other partial paralyzes. Phosphorus again is sometimes useful in making chronic eruptions advance or recede; but it is especially as a remedy for impotence that it has been praised, though it has often disappointed the expectations of those who have prescribed it, and has either proved of no value at all, or its effects have only been ephemeral. Hence it would appear that the real remedial power of phosphorus is considerably restricted, and that it can only be regarded as of great value in paralytic affections. Dr. Delpech, who has studied so deeply the effects of sulphuret of carbon, praises phosphorus highly as an agent to remove the paralysis and loss of power which accompany intoxication by that substance. It is also of service in the so-called rheumatismal and hysterical paraplegiæ, or in other words those forms of paraplegia which are not caused by organic lesion, as well as in cases of cerebral disease in which all irritation has ceased and cicatrization has taken place. It is still more strongly indicated in cases of asthenic and diffused paralysis, consequent on diphtheria or some other acute affection. Gueneau de Mussy, Isambert, and Féréol have all found it efficacious in the treatment of mercurial tremour; it is also believed to be so in paralysis agitans and in the various forms of medullary sclerosis affecting the antero-lateral cords, and above all in sclerosis of the posterior columns, the symptomatic expression of which is summed up in the term locomotor ataxy, which has been applied to it by Duchenne. Dujardin-Beaumetz is he who has most strongly recommended the plan of treatment by phosphorus in this and similar affections; but it is questionable, M.

Gubler thinks, how far many of the successes attributed to its use are really due to its remedial powers. We forget, he says, the natural processes of cure that often take place. Phosphorus is an active agent that may momentarily re-illumine the fading spark and revivify the languishing powers of life; but as it brings no energy with it, it impoverishes rather than enriches, and can do little for a nervous system exhausted by a chronic affection. The amorphous phosphorus is perhaps the best mode of prescribing it, as this possesses no exciting or irritating action. Externally, it has been chiefly employed in squamous affections of the skin as a parasiticide in itch and as a caustic in the place of the moxa. Recently Tavignot has declared that it will render the cataractous lens transparent, but the negative facts obtained by MM. Gosselin and Maisonneuve render this more than doubtful. In regard to the mode of its administration, solutions are usually preferable to pills. Amongst the former are the ethereal tincture, which contains one part in sixty, and of which ten drops are a dose; the solution in chloroform, which is now almost abandoned; and the solution in oil, which is by far the best, and especially that prepared by Méhu. Here the oil is dehydrated and decolourized by exposure to a heat of 250°C ., and the phosphorus is added when it was cooled. A twentieth part of ether is then added. The proportion is one part of phosphorus to 500 of oil, and it contains two milligrammes in fifteen drops. Each capsule contains one milligramme.—*The Practitioner*, July, 1873, from *Bulletin Général de Thérapeutique*, May 30th, 1873.

10. *Nitrate of Zinc as a Caustic*.—M. LEFORT describes (*Journ. de Pharm. et de Chimie*, May, 1873) a caustic paste prepared from nitrate of zinc, which has been reported on favourably by Drs. Clément and Desgrange, of the Hôtel-Dieu, Lyons. The nitrate is prepared by dissolving commercial zinc with heat in equal volumes of nitric acid and water, maintaining an excess of zinc, and concentrating until a slight basic precipitate is formed, which carries down any iron present. Boiling water is then added, and, when cool, the solution is filtered, and evaporated at a gentle heat until slight ebullition takes place; if then left to cool, it forms a cake, which should be broken up and drained in a glass funnel. Of the nitrate of zinc so prepared, 100 grammes are dissolved in 50 grammes of water, and afterwards incorporated with 50 grammes of wheaten flour. This forms an homogeneous paste, which remains soft, spreads easily over surfaces without afterwards contracting, and does not spread at the edges through absorption of moisture. When made into cylinders, it should not be dried by heat, as it slightly decomposes and becomes yellow and friable; it may be kept dry by placing it in a tin box with some pieces of quicklime, but not in contact with them.—*London Medical Record*, June 18, 1873.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

11. *Pathogeny of Spontaneous Cerebral Hemorrhages*.—A writer in the *Mouvement Médical* (Jan. 11, 1873) remarks that until now the causes to which spontaneous cerebral hemorrhages have been assigned are sclerosis of the small cerebral arteries and fragility of the vascular walls due to atheroma or fatty degeneration, etc. MM. Charcot and Ch. Bouchard, relying on a great number of careful observations, have rejected arterial sclerosis as the cause, and have pointed to the presence of miliary aneurisms as leading to spontaneous hemorrhages. For several years past Zenker has applied himself to the verification of this fact, and in every case that he has himself examined with sufficient care, has determined the presence of miliary aneurisms, not only in the neighbourhood of the hemorrhage clot, but in other parts of the brain. They are true aneurisms, that is to say, they are formed by a vascular dilatation

bounded by all the arterial coats. These minute aneurisms were described long ago by Virchow, but it is unquestionable that MM. Charcot and Bouchard were the first to discover their frequent presence and their pathogenetic influence in spontaneous cerebral hemorrhage. They may be seen with the naked eye, being sometimes scarcely visible, and sometimes about the size of a pin's head. Occasionally they are isolated, but may also be found scattered through the whole extent of the brain. The usual course of cerebral hemorrhages is as follows: The inner coats of the arterioles first become ruptured, and thus give rise to the formation of a dissecting aneurism. This state of things may continue for some time; or, in consequence of a process of regression, nothing remains but a little pigmentary tubercle. Lastly, in other cases the adventitious tunic at length becomes ruptured, and gives rise to a cerebral hemorrhage.

So far Zenker agrees with MM. Charcot and Bouchard, but he differs from them on the following points. While the French authors consider arterial sclerosis as altogether independent of the formation of these minute aneurisms, Zenker, on the contrary, is persuaded that they are due to sclerosis of the inner coat of the cerebral arterioles—a fact which was long since pointed out in regard to aneurisms of the larger arteries. Even if miliary aneurisms may exist without any alteration of the arteries at the base of the brain, microscopical investigations have nevertheless shown that in the neighbourhood of these miliary aneurisms the inner coats of the arterial branches have undergone peculiar changes, consisting of irregular thickening and sclerosis, and sometimes of fatty degeneration.—*Lond. Med. Record*, April 30, 1873.

12. *Case of Local Softening of the Brain from Thrombosis of Syphilitic Arteries.*—By Dr. J. HUGHLINGS JACKSON. A gentleman aged thirty-eight, in apparently good health, was first seen in July, 1867, for recent (July 14th) paralysis of the parts supplied by the left portio dura nerve, and for recent partial deafness of the left ear. There were also remains of paralysis of the right leg, which had begun in April. He rapidly got rid of all his nervous symptoms after taking iodide of potassium; but he did not continue the drug because he believed all his ailments to be owing to ague-poison. He had been in the West Indies, and still remained subject to slight shivering attacks. He had had primary syphilis fifteen years before. He remained well until March 2, 1868, when he became hemiplegic of the left side. He would not take any drugs except aperients. Nevertheless, in about a week he was apparently well again; but on March 21st he was found apoplectic and again hemiplegic—this time of the right side. He died next day. At the necropsy there were found diffuent softening of part of the right corpus striatum, and also softening of the left corpus striatum. There was syphilitic disease of each middle cerebral artery. Thrombosis of each at the part diseased accounted for the two local softenings, and for the two attacks of hemiplegia related to them. The random succession of symptoms in this case was very characteristic of syphilis. Dr. Hughlings Jackson said that the case showed one of the several very indirect ways in which syphilis caused nervous symptoms. The hemiplegia in such a case was dependent directly on softening of the corpus striatum, produced by thrombosis of a syphilitic artery. The "syphilitic hemiplegia" here illustrated was but one of three kinds producible by syphilis. Again, the case showed that recovery would occur from hemiplegia, notwithstanding that the damage which caused that hemiplegia was not altogether repaired. Iodide of potassium was not likely to be useful in such a case of hemiplegia, though syphilitic; while it was useful in cases of recent palsies of cranial nerves. In treating the latter we were treating recent syphilitic disease; whilst in treating the kind of syphilitic hemiplegia under remark, we were treating local cerebral softening.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

13. *Uncommon form of Uric Acid Crystals observed in the Expectorations and in Saccharine Urine.*—Dr. J. W. MOORE states (*Irish Hospital Gazette*, July 15, 1873) that he examined the sputum of a gentleman who had for some time been troubled with certain gouty symptoms. In addition to epithelium,

pus and mucus corpuscles, the sputum, which gave a *neutral* reaction with test-paper, contained a number of very delicate, spear-headed, apparently octahedral crystals, the exact nature of which I found considerable difficulty in ascertaining. The finer crystals resembled those of stearic or stearic acid, as figured by H. Lebert (after Funke) in his work entitled *Traité d'Anatomie Pathologique Générale et Spéciale* (Atlas, vol. i., plate excix., fig. 7). Others might readily be mistaken for diatoms, from their peculiar central marking and general size and shape; while a few of the largest bore a strong resemblance to spear-headed crystals of uric acid, as depicted by Dr. Lionel Beale (*Kidney Diseases, Urinary Deposits and Calculous Disorders*, third edition, plate xxvii., fig. 151, p. 384.)

On December 17th I had a second opportunity of observing these crystals in the expectoration of the same gentleman, and on this occasion I subjected them to a more searching chemical examination. By teasing out the sputa, I succeeded in setting free several of the crystals into some pure water. A drop of liquor potassæ was then added, and instantly the crystals disappeared. They also proved to be slowly soluble in strong acetic acid, but ether had no effect upon them. The conclusion drawn from this examination was that the crystals were composed of uric acid.

He further states that he had occasion to examine a specimen of diabetic urine, pale, and having a specific gravity of 1036, the quantity of sugar present being considerable. When the urine was allowed to stand, a visible deposit of uric acid rapidly took place. On microscopical examination, a normal quantity of mucus and epithelium was observed, in addition to which there were present numerous specimens of torula, and great numbers of uric acid crystals of various forms and sizes. Among others there were many examples of the delicate spear-headed or diatomic crystals I had noticed in the gouty expectoration last December. They all answered to the ordinary tests for uric acid, and of their precise nature no doubt could possibly be entertained.

The presence of free uric acid in the respiratory tract of gouty persons is a condition possessing much interest on etiological grounds. It can hardly be doubted that here we discover one cause, at least, of the tendency to, and occurrence of, bronchial affections in so many cases of gout. Irritation of the bronchial mucous membrane by delicate acicular and spear-headed, or (as they might be termed) diatomic crystals of uric acid, would surely be sufficient to induce a low or chronic form of bronchitis, which would become more and more aggravated as the gouty poison began in time to affect and weaken the heart.

14. *Symptomatic Alteration of Muscles.*—Dr. GEO. HAYEM, of Paris, uses this expression to denote the changes which take place in muscle under the influence of most diseases. He had found them not only in acute specific diseases, but also in diseases of slow progress, leading gradually to marasmus and cachexia. The mode of evolution and the histological characters of the changes were found to differ according to the disease which they attended. The general result of numerous researches made by M. Hayem was to show that the muscular system indicates, in distinct anatomical characters, the general disturbance of nutrition which attends all diseases. It might be said, in general terms, that when nutrition suffers, the muscular tissue has a tendency to disappear, at least partly, more or less rapidly, in various ways. Along with this process of destruction, there is also, both in chronic cachectic states and in acute diseases, a constant effort at repair, attended with varying results. The new muscular fibres in all these cases are formed by proliferation, either of the pre-existing muscular cells, or of the cells of the connective tissue (the internal and external perimysium). M. Hayem had found changes in the heart analogous to those met with in the muscles of the body, both of destruction and of reproduction of muscular fibres. The paper was illustrated by specimens.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

15. *Abscess of the Liver opening into the Ascending Cava.*—Dr. LEON COLIN, Professor at Val de Grace, records (*L'Union Médicale*, Aug. 5, 1873) a very remarkable, if not unique, case of this, observed by him in his service at

Val de Grace. At the autopsy it was found that an abscess of the liver had burst into the ascending cava, and that there were secondary purulent collections in the pulmonary parenchyma. During life, these purulent collections opened into a bronchus and the pus was expectorated, which led to the error of supposing that the abscess of the liver had penetrated through the diaphragm into the bronchi.

16. *Epidemic of Typhoid Fever from Infected Milk.*—A very serious and extensive epidemic of enteric fever has recently prevailed in one of the wealthiest and (from a sanitary point of view) one of the best cared-for parishes in the west end of London. There have been about 500 cases distributed in 104 families, 96 of which are known to have used milk from the same dairy, the circumstances connected with the outbreak in the remaining 8 families have not yet been investigated. The mass of evidence points in a most striking manner to the milk of the particular dairy above referred to as at all events the carrier of the germs of infection.

The present Marylebone epidemic is apparently the eighth known instance in which typhoid (not to mention scarlet) fever has been scattered through families by means of their milk-supply. The first instance occurred at Penrith, and was ably investigated by Dr. W. M. Taylor; then followed the Islington epidemic, reported upon by Dr. Ballard, and in addition to these, epidemics in which milk was apparently the disseminator of the poison have occurred twice at Leeds, and once at Parkhead, Chester, Edinburgh, and lastly in Marylebone.

From the *Lancet* of August 16th, we learn that many facts have been noted which seem to point conclusively to the milk as the source of infection, and there is no stronger piece of evidence than that which occurred in the family of Dr. Murchison, which was the means in the first instance of giving a clue to the origin of the disease. The facts were briefly as follows: On July 22d the three eldest of Dr. Murchison's seven children sickened with typhoid within a period of twenty-four hours. On looking about for the cause he was convinced that it was not due to defective drainage or polluted water, and was inclined to think that it could not be the milk, for in that case it would have been reasonable to suppose that the four younger children, who have to a great extent a milk diet, would have been the first to suffer. On July 31st two of the younger children sickened. Dr. Murchison's house has been supplied with a double milk-supply; one quantity of milk for the household at large, and another quantity, which was always brought in a special sealed can, for the use of the baby and the occupants of the nursery. Up to July 31st those only suffered who had derived their milk from the ordinary household supply, while those who partook of the nursery supply escaped. On July 25th the nursery supply was discontinued in consequence of the departure of the baby for the country, and the three remaining younger children were thrown upon the household supply, and within six days of that date two of them were down with typhoid. It is worth adding, that certain members of his household who drank much water suffered in no way.

The fact, which at first did not seem to point to the milk, now admitted of a very different interpretation, and in the face of former experience it became at least probable that the milk was at fault. Several surgeons living close to Dr. Murchison have had typhoid in their households. In one case two children and two servants sickened; in the other case the family were away, but two of the servants had typhoid, and one of them has, we regret to say, since died from perforation of the bowel. At this latter house the person who brought round the milk remarked that, "wherever she went with the milk there seemed to be somebody ill." We have already received information of sixty-one families residing in the parishes of Marylebone, Paddington, and St. George's, which are infected with typhoid, and in all but two of these families, the source of the milk-supply is the same. Of the two cases which seemed at first to counter-balance to a slight extent the case against the suspected dairy, one has since been found to lend the strongest confirmatory evidence. In this case only one child sickened in a household not getting its milk from the suspected source, but the child itself had been to stay a few days with the family of a friend

getting its milk from the suspected source, and of this milk she drank largely; and in the same week the child who remained with its parents in London, and five members of the friend's household who had left London and returned to Derbyshire, sickened with typhoid simultaneously.

It is of course not for one moment to be supposed that every case of typhoid at present in London can be traced to milk-supply as a cause, but when the only connecting bond between sixty families in which typhoid is raging to a greater or less extent is the shop where they buy their milk, the suspicions against such shop are certainly justifiable, and we feel it our duty to give them publicity. Some of the cases are very extraordinary. A lady of title and a physician living next door to each other in Grosvenor Street obtain their milk from the same source, and a physician who lives opposite has seen the milk for these two houses *taken out of the same can*. Two of the servants of the lady of title have sickened with typhoid, and one of them has, we hear, since died in St. George's Hospital. In the physician's household there has been no typhoid, and apparently for the reason that it is a stringent rule of the house that the milk is all boiled as soon as received.

In the instance of the household of a well-known nobleman, the domestics have been supplied with milk from the suspected source, but the family itself from another source. Of the servants, five are down with typhoid, but none of the family have suffered. The ten members of the household who did not take the suspected milk drank the same water as the domestics.

The family of a lady of title in Brook Street consists of three children. The eldest drinks tea for breakfast, and has orange wine and water at night. The two younger children drink milk both at night and morning. The two younger suffered, while the eldest escaped.

In a family which does not get its milk from the suspected source there are two servants ill, and it turns out that a short time since, returning home hot and weary from a walk, these two servants sent out and purchased some milk from the suspected source. There are no other cases of fever in this family.

A young lady aged eighteen sickened at Norwood with typhoid in the last week of July. There were no other cases in the house (which contained many children), and no typhoid fever in the neighbourhood. It seems that she had been staying during the early part of July with some friends near Portman Square, that she had contracted measles there, and during her convalescence had drunk a very great deal of milk, which had come from the suspected source. Within three days of her return to Norwood she sickened with typhoid.

In a house in which four servants are living on board wages two of the servants get milk from the suspected source, and two do not. The two former have typhoid fever.

In the Middlesex Hospital there are at present nine patients with typhoid fever. Of these, two came from distant parts of London, and of the remaining seven, six have been getting milk from the suspected source.

In the London Fever Hospital on August 6th, there were three cases of typhoid fever, and of these two got their milk from the suspected source.

In University College Hospital there have been three cases (one of which had died) of typhoid, all of whom got their milk from the suspected source.

The investigation which has already been made by Mr. J. Netten Radcliffe and Dr. Whitmore serves to confirm that which, to all reasonable men, was a certainty. At one of the farms belonging to the dairy, situated at Chiltern Grove, near Thame, it has been discovered that one of the men employed died on June 8th, with all the symptoms of typhoid, and the son of this man is at present ill with the same disease. The sanitary condition of this man's house and the farm is exceedingly bad, and there can be no doubt that some of the water used on the farm has become contaminated with typhoid poison.

17. *Treatment of Glandular Affections.*—Dr. F. PAGE ATKINSON gives (*Edinburgh Med. Journ.*, August, 1873) the following outlines of the treatment he has pursued for some years in glandular affections, and with satisfactory results.

In *Quinsy* he says: "I can predict with certainty that any patient will be

quite well and able to resume his duties on the fourth day; whereas, by the old method of treatment, the disease lasted from nine to ten days. I do not know of a single instance in which matter has formed, except prior to the time of the patient coming under my care. The prescriptions I give are the following:—

"20 grains of bicarbonate of potash; 30 minims of the compound tincture of guaiacum; as much as is necessary of the compound tragacanth powder, in one ounce of water, and 15 grains of citric acid, in half an ounce of water. To be taken in a state of effervescence, three or four times daily.

"25 minims of the tincture of iodine, in an ounce of water, to be used as a gargle three or four times daily; three or four glasses of port wine in the course of the twenty-four hours, and as much beef-tea as the patient can take.

"The throat should be left uncovered, and poultices, steam inhalations, etc., should be particularly avoided, as also should the use of purgatives. In these cases there is generally a rheumatic tendency; and it will be found on inquiry that there has been excessive mental or bodily exertion prior to the attack.

"Quinsy is not the result of cold; for, if it were, laryngitis would be a more frequent accompaniment than it now is. As regards the treatment, I would remark that it must be carried out in its entirety, or the results expected will not be obtained. When suppuration has already commenced, order simply the iodine gargle, the port wine and beef-tea, and omit all internal medicines.

"In the case of *Inflammation of the Breast*, give the following: 20 grains of bicarbonate of potash; 10 minims of spirits of nitrous ether; 10 minims of aromatic spirit of ammonia, in one ounce of water; and 15 grains of citric acid in half an ounce of water; and order to be taken, in a state of effervescence, every four hours.

"Apply to the breast an ointment consisting of three parts of the extract of belladonna, and one of iodine ointment. Keep the patient up with good, strong beef-tea, and if there is much fever, with a quick pulse, give port wine. The rationale of the treatment proposed is this: the effervescing citrate of potash, as stated above, acts as a febrifuge; the nitre relaxes the cutaneous vessels, and lessens the quantity of fluid which keeps flowing to the breast; while the belladonna soothes pain, and the iodine helps the absorption of the lymph which has been thrown out. Where abscess has already occurred, give 30 minims of the perchloride of mercury solution, 15 minims of spirits of chloroform, 15 minims of dilute hydrochloric acid, 60 minims of compound tincture of bark, in one ounce of water, three times daily, and paint the breast with a solution of nitrate of silver (2 grains to the ounce of water).

"I have rarely found it necessary to strap the breast, except when the abscess has been very deep, and the opening has taken place on the upper surface of the breast; and even in these cases strapping rarely proves of much service.

"In cases of *Inflammation of the Testis*, I order the effervescing citrate of potash, in combination with drachm doses of hyoscyamus. The testicle itself should be well supported, and kept covered with some lint dipped in a lotion of 15 minims of the tincture of opium and 15 minims of the tincture of belladonna to the ounce of water, and this again enveloped in oiled silk. This method of treatment will be found to lessen pain, and also the tendency to bubo. When the testicle becomes chronically enlarged, cover it with lint smeared over with blue ointment, and strap, and give the perchloride of mercury and bark internally. Where *Bubo* occurs by itself, give the effervescing citrate of potash and hyoscyamus internally; paint the enlarged gland with iodine; keep it covered with spongiopiline dipped in a solution of sulphate of zinc and alum (3 grains of each to the ounce of water), and enjoin rest. In both these cases, stimulants should be avoided, and the patient should only take a light diet. Barley-water may be recommended as a drink. Beef-tea, of course, should be freely given. Where the *parotid* becomes inflamed, give the effervescing citrate of potash and guaiacum, paint the gland with tincture of iodine, and then, when dry, apply a linseed-meal poultice which has been made up with a warm lotion, consisting of 3 grains of alum and 3 grains of sulphate of zinc, in one ounce of decoction of poppies. Port wine should be given according to

the necessity of the case, and plenty of beef-tea. Where there is *inflammation of the absorbents*, I order the effervescing citrate of potash and ammonia, and keep the limb incased in a poultice made up as above. When there is *suppuration*, I find it best to prescribe 3 grains of muriate of cinchonia, 15 minims of the tincture of the perchloride of iron, and 15 minims of spirits of chloroform, in one ounce of water, three times daily; port wine or brandy, according to the requirement, and beef-tea, as much as can be taken.

"In the case of *Scrofulous Enlargement of the Glands*, give the syrup of the iodide of iron internally, with small doses of gray powder and powdered pecacuanha, and paint externally with tincture of iodine; and the same treatment may be applied both internally and externally where there is an ulcerated surface. The local application of iodine certainly seems to effect more good than the nitrate of silver.

"Where there is *Enlargement of the Thyroid*, apply a lotion constantly, consisting of 3 grains of alum, 3 grains of sulphate of zinc, 3 grains of sulphate of iron, to the ounce of water, and give internally the following mixture: 3 grains of the bromide of potassium, 60 minims of Parrish's chemical food, 10 minims of tincture of digitalis, water to the ounce—three times daily. Pancreatic emulsion is also of use in giving nourishment to the nervous system. Underdone meat and plenty of farinaceous food should be also recommended."

18. *Action of Cold Water on the Spleen*.—Dr. F. MOSLER has arrived at the following conclusions from experiments on the action of water on the exposed spleens of animals. 1. The immediate contact of water with the normal spleen produces a visible contraction of the organ, varying in degree with the temperature of the water and the duration of the application. 2. In a less degree, cold water exerts the same action on the spleen through the intestinal walls. The effect of a cold douche is greater than that of the application of cold compresses or pieces of ice; probably the mechanical influence plays a part here. The action of water is inferior to that of quinia in causing contraction of the spleen. 3. Cold water also produces diminution in the size of splenic tumours, both acute and chronic. 4. The febrile paroxysm in ague may be arrested by cold douches applied after Fleury's method. 5. The cold douche does not supersede the use of quinia either in recent or in chronic cases of intermittent fever. 6. The therapeutic action of the cold douche in intermittent fever is not complete. It does not prevent relapses nor the formation of splenic tumours. 7. The splenic tumour in typhus is reduced in size by the use of cold water. 8. Much good is to be expected from a combination of the application of cold over the spleen, either in the form of ice or of the cold douche, with the administration of quinia.—*British Med. Journ.*, June 21, from *Virchow's Archiv*, 1873, pt. 1.

19. *Hydrocyanic Acid as a Remedial Agent in Delirium Tremens*.—Dr. HENRY B. DOW expresses his belief (*Brit. Med. Journ.*, May 31, 1873) that hydrocyanic acid fulfils all the indications in delirium tremens better than opium, digitalis, or belladonna. "It allays the irritation of the stomach, and checks the nausea and vomiting; it quiets the nervous excitement, and, by so doing, tends to produce sleep; and it also controls the action of the heart. It has the advantages of producing its effects quickly, and of not being cumulative, and is taken readily by most people. I have used it with the most satisfactory results, and will now mention my usual method of administration. I give it in combination with bicarbonate of potash, chloric ether, and camphor mixture, in doses of one, two, or three minims of the Pharmacopœia solution every two, three, or four hours, according to the severity of the case; and also find that benefit may sometimes be derived from the addition either of three or four grains of carbonate of ammonia, or a few minims of the compound spirit of ammonia. The patient is to be nourished by the administration of beef-tea, milk, etc., and wine or other alcoholic stimulants to be given, according to the discretion of the medical adviser; the less, however, the better. As soon as the worst symptoms have been relieved by the above treatment, the appetite is soon restored by the use of dilute nitric acid and decoction of cinchona."

20. *Nitrate of Potash in Acute Pneumonia*.—Dr. H. MACNAUGHTON JONES extols (*Dublin Journal Medical Science*, July 1873) the value of nitrate of potash in doses of 15 grs. every three hours in acute pneumonia, and relates four cases in support of his views. These cases, he remarks, “show the action of the nitrate of potash in reducing the fever in acute inflammatory attacks of the lungs. I do not propose to discuss the method in which it cures the inflammation and arrests its progress, whether it be by promoting the absorption of its products through its action on the fibrin, or by a direct action on the blood through an effect on its corpuscles, or only a secondary influence by reducing the force of the fever, and lowering the force and frequency of the heart’s pulsations. I am inclined, myself, to believe that it acts in both ways, and that the beneficial results which I have frequently witnessed coming on so speedily after its administration can hardly be altogether due to an indirect effect on the heart’s action and on the general pyrexia. Nitrate of potash, in similar doses, has proved to me an invaluable agent in acute rheumatism, either by itself or combined with bicarbonate; and here, I think, we must look for an explanation other than above stated, and attribute its power to its direct action on the inflammatory blood.” It should be remarked that in these cases Dr. J. gave at the same time large doses of quinia, and covered the chest with flaxseed poultice.

[Nitrate of potash was a favourite remedy of the late Professor Chapman in acute pneumonia and rheumatism, and we have often witnessed its beneficial effects.]

21. *Oxide of Zinc in Infantile Diarrhœa*.—Dr. E. MACKEY, of the Children’s Hospital, Birmingham, extols (*British Medical Journal*, July 12, 1873) the value of oxide of zinc in infantile diarrhœa. It has given him, he says (suitable diet being prescribed) excellent results in all the varieties of that disease, notably in those complicating whooping-cough. The dose may be one grain for any age under two years, and may be given with a little syrup, mucilage, etc., three or four times daily, not on an empty stomach.

22. *Carbolic Acid in Dysentery*.—Dr. AMELUNG, of Carlshafen, states that he has treated two epidemics of dysentery with carbolic acid, losing only two patients out of eighty, one of whom was a very old woman, and the other an infant of six months. If hard fecal masses can be felt through the abdominal walls or found in the stools, he begins the treatment with a castor-oil emulsion; if not, he commences with carbolic acid at once. The strength employed is a $\frac{1}{2}$ per cent. solution. His formula is nearly as follows: Carbolic acid, 15 grains; rectified spirits of wine, 15 minims; tincture of opium, 15 to 20 minims; mucilage and poppy syrup, of each 6 drachms; distilled water to 3 ounces; a tablespoonful to be taken every two hours. To children he gives smaller doses according to age. He has often given his patients as much as seven or eight grains of carbolic acid in the twenty-four hours, and has never had the slightest symptom of poisoning. His experience of former epidemics does not allow him to attribute these favourable results to the small quantity of opium contained in the prescription.—*Lond. Med. Record*, April 30, 1873.

23. *Elimination Treatment of Cholera*.—Dr. WM. SEDGWICK directed attention to the fact that, in cases of cholera, purging was apt to cease when collapse became intense, owing to inability of the bowels to expel their contents. This cessation of purging was followed by abdominal distension from the accumulation of the rice-water flux; and the attempts to restore the action of the bowels by purgative drugs had signally failed. The assumed elimination, by means of purgatives, of an assumed poison in cholera, was undoubtedly based on a misapprehension of the pathology of a flux; and the practical conclusions to be drawn from the evidence adduced were that in a fully established case of cholera, the cathartic method of treatment would tend (1) to deepen the collapse, (2) to increase the flux, and (3) to weaken the expelling power of the alimentary canal.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

24. *Gelatine Suppositories for the Relief of Fecal Accumulations.*—Dr. NAGEL strongly recommends the use of gelatine suppositories for the relief of accumulations of hardened feces in the rectum and sigmoid flexure of the colon. The lower down in the intestines these accumulations descend, the harder and more bullet-like and more decomposed they become. They lose their plasticity, or in other words, their power of adapting themselves to the cylindrical shape of the bowel. They also become heavier, and sink downwards into the hollow of the ileum; they increase or even obliterate the normal Roman-S-like curve of the colon, elongate the rectum, extend behind the bladder, lie across the uterus, and push the bladder towards the left side. This is particularly the case in aged persons. Hence, perhaps, the surgical reason for making the incision on the left side in lithotomy, because it is easier in this way to reach the bladder, and to avoid wounding the rectum. These fecal accumulations may be induced by enlargement or retroversion and retroflexion of the uterus, or through the bladder being only partially emptied of its contents, or by hypertrophy of the prostate, or through the calibre of the rectum being diminished by internal hemorrhoids; defective innervation, atony, and want of due reflex irritability of the bowel, with thinning and atrophy of its muscular coat, may also set up coprostasis. These conditions are common in apoplectic and paraplegic cases. The indications for treatment must therefore be to macerate and soften the fecal masses, since they constitute fresh hindrances to a due action of the bowels, giving rise to stretching and paralysis of their muscular coat, and cause flatulence, prolapse of the rectum, involuntary emission of semen and urine, hernia, with venous congestion, and other similar inconveniences. After discussing various objections to eccoprotics, drastic purgatives, enemata of various kinds, and even to suppositories of cacao butter, Dr. Nagel states that suppositories of brown gelatine have been found by him to be of the greatest service in cases of obstinate coprostasis. He finds that when these suppositories have been first soaked for twelve hours in cold water, so as to be moderately swollen and soft on their exterior, and are then pushed as far as possible into the rectum, they gradually break up and soften the hard, bullet-like masses, and make them so soft and slippery that, when the patient's diet and regimen are carefully regulated, we may confidently expect a copious natural evacuation of pulraceous consistence in the course of little more than twenty-four hours. The explanation of their *modus operandi* is to be sought in the hygroscopic property of the gelatine. The suppositories should be introduced in the morning.—*Allgemeine Wiener Med. Zeitung*, April 1, 1873.

25. *Echinococcus of the Spleen; Recovery.*—Drs. ROSENSTEIN and SANGER record a case of this in a woman *æt.* 37, who, previously quite healthy, began to suffer intense pain in the left side about two and a half years ago, and this became steadily worse, while, at the same time, a tumour grew at the painful spot. The tumour was found to be in connection with the spleen, and reached downwards seven centim. below the umbilicus, and formed a curvature towards the right and upwards, the extremity being at the xiphoid cartilage. The area of dulness of the spleen commenced at the ninth rib. The tumour fluctuated distinctly, and was very painful; it did not move with the motions of the diaphragm, and was not covered by any portion of the bowel. An exploratory puncture evacuated a limpid fluid of 1.007 sp. gr., which gave an opaque precipitate upon boiling, or upon addition of an acid. After the puncture the tumour disappeared, but returned in a few days again, much larger than before. A second and a third puncture gave exit to a purulent fluid, in which no hooks, or portions of such, were ever found. This, and the circumstance that the fluid which was at first removed contained albumen, made the presence of echinococci, at first supposed, seem improbable, and the diagnosis was restricted now simply to that of a cyst of the spleen. The increasing size and pain of the tumour made its extirpation necessary, and the operation was performed with perfect success. The cyst which was removed proved, after all, to be an echinococcus sac, in which several cysts, from the size of a pea to that of a hazelnut, were found. Scolices, or elements of these, could not be found, so that it was an instance of so-called acephalocyst. The most remarkable points in this

case are the occurrence of a solitary echinococcus in the spleen, the great painfulness of the tumour, and the presence of albumen in the fluid first removed.—*Irish Hosp. Gaz.*, August 15, 1873, from *Berliner Klin. Wochenschrift*, No. 20.

26. *Preventive Treatment of Uric Acid Calculi.*—Dr. GEO. HARLEY limited himself to the consideration of the means of arresting the formation of uric acid calculi, and facilitating the discharge of those not already too large to be voided by the natural channel, which included all calculi not exceeding the size of field-beans. Tea, coffee, wines, and beers were to be prohibited, or, at least, prescribed in very great moderation, to patients labouring under the uric acid diathesis. He next alluded to the recent proposal of Dr. Day, of Victoria, to give ozonic ether in such cases, and passed on to the consideration of the alkaline treatment. From the very earliest times, alkalies had been resorted to with the view of retaining uric acid in solution until its expulsion from the body; and what the ancients did empirically we moderns did scientifically by improved methods and with much greater success. The alkalies now in most general use were soda, potash, and lithia, in the form of carbonates, citrates, and acetates. Ammonia, on the other hand, was avoided in the uric acid diathesis, on account of the salt which it formed being less soluble than any of the others. The common idea was, that the action of alkalies in the uric acid diathesis was solely and purely a chemical one. There no doubt existed a chemical action, and that a most important one; but beyond this, there was an important physiological action produced in the body, through which the oxidation process was so much increased as to transform the little soluble uric acid into the very soluble urea. To Dr. Basham was due the establishment of this as a clinical fact. In the treatment of the uric acid diathesis, more depended on the dose than on the kind of alkali given. As a general law, it was unnecessary to render the urine more than neutral, except in cases where we were attempting the dissolution of stones already formed; but, even then, there was danger in making the urine either too alkaline, or retaining it in an alkaline state for too great a length of time. Dr. Nunneley found that from ten to eighteen drachms of citrate of potash in twenty-four hours notably diminished the excretion of urea; and Dr. Basham found that half-drachm doses given three times a day augmented it to even double or treble its previous amount. Dr. W. Roberts, of Manchester, found that while sixty grains of carbonate of potash to a pint of water daily dissolved twenty per cent. of an uric acid calculus, the solvent power of the solution gradually diminished as the solution was made weaker or stronger. Dr. George Harley called attention to the very great importance of the quantity and quality of the drinking water. Patients who had suffered from gravel or stone in one district, frequently got rid of it on removing to another; and this he had been able to trace to the difference in the quality of the water. Hard water, especially that from chalky districts, caused stone; soft water cured it. He consequently recommended the free use of distilled water, not only as a menstruum for the medicine, but also for cooking purposes. Moreover, as the more pure water taken, *ceteris paribus*, the more effectual was the treatment, he gave his patients, when possible, from twenty to forty ounces of filtered rain or distilled water in the twenty-four hours; and where they objected to its unpalatability, a squeeze of lemon or a pinch of salt was added to it. Hard water must in all cases be avoided. The only substantial benefit derived from mineral waters was, he believed, that the medicine was there given in a very dilute form. In mineral waters the relative proportions of their ingredients were not regulated according to the age, constitution, state of health, and other special requirements of the patient. As regarded the benefit of mineral waters in the uric acid diathesis, he pointed out that, contrary to some recent published opinions, it was due chiefly to the alkaline salts they contained. The writer concluded by saying that the chief obstacle to our success with chemical therapeutics in the treatment of calculi lay in the imperfect knowledge of physiology and chemistry possessed by practical men, who almost invariably failed in their endeavours to combine science with empiricism.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

27. *Elephantiasis Arabum treated by Tincture of Iodine Internally and Externally.*—Dr. OLAVIDE, at a meeting of the Academy of Medicine of Madrid (Dec. 12), presented two patients, the subjects of elephantiasis Arabum, whom he had treated by tincture of iodine used both internally and externally. The first patient was a man whose parents had been similarly affected. When he came under Dr. Olavide's care, the circumference of his leg was seventy centimètres; when he was presented to the society, it was scarcely fifteen. The treatment consisted in the external application of tincture of iodine by means of compresses, and the internal administration of the same remedy, commencing with doses of six drops, and gradually increasing the quantity till it reached a drachm. In a fortnight after commencing this treatment, the circumference of the leg had diminished by one half. The desquamation which took place was aided by the inunction of glycerole of starch. Finally, compression from below upwards was employed. The patient, when the report was made, had been two months under treatment. The only symptoms remaining were vitiligo of the thigh and slight infarction of the dermis.

The second case was one in which the circumference of the leg was sixty-eight centimètres. The same medicine was employed, also with a favourable result. The patient had a slight erysipelatos eruption on two occasions during the treatment, but this proved to be of little consequence.—*London Medical Record*, May 14, 1873, from *El Siglo Medico*, March 9, 1873.

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY.

28. *Researches on Pyæmia.*—Dr. BIRCH-HIRSCHFELD, on examining daily the pus coming from a wound, found that, with the ushering in of the first symptoms of pyæmia, the pus also showed a corresponding change, consisting in the presence of micrococci, either in pairs, strings, or colonies (the latter especially when pyæmia was far advanced or rapid in its course), and in an altered appearance of the pus-corpuscles, which were finely granular, of less definite outline and lustre, and which showed their nuclei very distinctly without the addition of any reagent.

The blood of such pyæmic patients contained similar micrococci, and its white corpuscles had undergone a change very similar to that of the pus-corpuscles. Sometimes the pus of a pyæmic patient would contain, besides these, a quantity of the *bacterium termo* or *bacterium lineola*, which are the common bacteria of most putrescent matter; while micrococcus is, according to Cohn, Clebs, and Hirschfeld, not to be considered the ferment of putrefaction.

Healthy pus coming from a healthy wound or from a simple abscess showed no micrococci and no altered pus-corpuscles, while putrescent pus (either after exposure to air or coming from an unhealthy or gangrenous wound) contained only the bacteria (*termo*, *lineola*, and *bacillus*) due to putrefaction.

The difference between pyæmic and putrescent pus was now further shown by inoculations on rabbits. Healthy pus, injected subcutaneously into a rabbit, gave rise only to a local abscess, without any further disturbances. Putrescent pus gave the symptoms of septicæmia, as described by Bergmann, Sanderson, and others—larger quantities only being fatal, and the fever appearing almost immediately after injection, showing the sepsis curve of Bergmann very well; while pus from a pyæmic patient, similarly introduced into a rabbit, gave rise to a different course of symptoms. The animal remained well for five or six days; and this period was followed by one of high and intermittent fever, diarrhœa, emaciation, and eventually and almost invariably by death from the sixteenth to the twenty-fourth day. Pus, blood, and the metastatic changes in such rabbits, showed again all the distinctive pyæmic properties described.

The importance of these researches, which not only show us the important part which the micrococci play in the production of pyæmia, but which also

define pyæmia as quite distinct from septicæmia (in opposition to the researches of Tiegel, Klebs, and Eberth), is not to be underrated; but a repetition and further extension of them would be highly desirable. Dr. Birch-Hirschfeld examined the different morbid products without any further reagents.—*British Med. Journ.*, June 21, 1873.

29. *Traumatic Herpes*.—According to M. VERNEUIL, the nerve lesion capable of giving rise to vesicular eruptions having the character of herpes or zona, is probably a neuritis, which may be spontaneous, or consecutive to an injury, a wound, contusion, compression, etc. Hence surgeons should count herpes among the complications which may present themselves in the course of treatment of injury or an operation; they must, in other words, admit a "traumatic herpes." Recognizing traumatism as a very general pathogenic cause, it is easy to understand that it may give rise to herpes as well as to erysipelas, tetanus, or any other accident of wounds; it remains to investigate the conditions under which this cutaneous manifestation may show itself. M. Verneuil endeavours to discover these conditions by the examination of a short series of cases. I. A case of fracture of the base of the skull; lesion of several motor nerves; zona of the face. II. A case of amputation of a finger; neuralgia of the stump; herpes of the stump and of the lips. III. White swelling of the knee; fruitless efforts at conservation; very violent pains; amputation of the thigh; divers nervous accidents; herpetic eruption of the stump. IV. Hydrocele, double puncture, inflammation of the tunica vaginalis; herpes of the thigh; death. V. Division of the soft palate (for removal of polypus); guttural and labial herpes. VI. Extirpation of the breast, labial and thoracic herpes; diphtheroid aspect of the wound; cure. After carefully analyzing these and other cases, Verneuil concludes that herpes may show itself during the evolution of an injury, as an independent intercurrent affection; but that it may certainly also arise from that wound, and be really of traumatic origin. Three forms may be distinguished—peripheral herpes, contiguous herpes, distant herpes. It may show itself during the work of reparation—precocious herpes, or a long time after cicatrization—delayed herpes; it may or may not be accompanied by general phenomena. It follows either on the wound of a nerve-track, or of a ganglion, or of a common wound where the ends of the nerves are alone concerned. In certain cases it may be explained by a traumatic neuritis; but in others either reflex action or blood change must be invoked. The prior hæmopathic condition of the patient seems to predispose to the development of traumatic herpes. Traumatic herpes may relapse; it may coincide with erysipelas, and simulate the vesicular variety of that disease. The development of precocious and febrile herpes is accompanied by a change in the granular membrane (which recalls what has been described under the name of diphtheria of wounds) and by a sharp but temporary hyperæsthesia of the wound. The prognosis of traumatic herpes is generally favourable except in the case of septicæmic hernia, but its gravity depends then on the general malady. Herpes at a distance is ordinarily fugacious, and does not compromise cicatrization. Peripheral herpes may be more tenacious; it follows the fate of the neuritis, of which it is only a symptom.—*London Medical Record*, July 9th, from *Gazette Médicale de Paris*, Nos. 20, 22, 23, 25, 1873.

30. *On Peculiar Modes of Transmission of Syphilis in Married Life*.—Dr. VICTOR DE MERIC, in a paper read before the Surgical Section, British Med. Assoc., passed first in review the modes in which a wife may be contaminated by her husband, and *vice versâ*; paying particular attention to those cases where no outward signs of syphilitic taint are apparent. He alluded, then, to the share of gestation in the mechanism of the contamination of the wife, observing that impregnation is not the only mode in which she may become affected with the complaint. Numerous facts had put beyond doubt the modes of transmission just alluded to; but he had met with cases where contamination had been effected in an exceptional manner. The author then related some of his exceptional cases. The first had reference to a gentleman who had been under his care several years before his marriage, and had passed through the

usual periods of syphilis. He married eighteen months after the last symptoms, and a series of healthy children were born. That father suffered now and then from impetigo, and had once very severe osteitis; but neither the wife nor children experienced any contamination. About ten years after marriage, the husband was indiscreet, and caught a chancre which subsequently became phagedenic. Considering the lesion, at first, as a mere abrasion, he took no precautions, and the result, unfortunately, was the breaking out of a fearful set of symptoms of syphilis in the wife. The author now asked whether this case did not prove that the secretion of a soft chancre, seated in a syphilitic individual, might convey the general disease; and added a few remarks as to the effects of pathological secretions from a person suffering, or having suffered from syphilis. The second case was illustrative of the great difference between occasional intimacy and the actual bonds of marriage. In this case the disease was conveyed from wife to husband, though no such accident occurred through several years of former intimacy. The third case related to a married gentleman, who caught a chancre which eventually proved indurated. The lesion was, however, so insignificant at first that no heed was taken. The wife was far advanced in pregnancy at the time, and the consequence was that foetus and mother were contaminated. These facts would go far to prove how infectious was the chancreous erosion in its nascent state. The fourth case was of a remarkable kind, as the gentleman suffered from systemic syphilis without having ever presented a primary sore. Here the wife escaped at first, but eventually had the disease through her infected child. Mr. de Méric alluded subsequently to a few other cases, in which mothers and numerous children remained healthy, though the husbands suffered from syphilis before and after marriage. He concluded by mentioning instances where the wives of syphilitic husbands had fallen into bad health, without presenting any actual symptoms of the disease. This paper gave rise to a discussion bearing chiefly on the question as to the frequency and forms of transmission of syphilis to the offspring, and as to its transmission to offspring without affecting the mother. Mr. Gant mentioned an instance of a married patient who, after having borne healthy children, acquired syphilis from her husband, and after some time gave birth to a healthy child. A recrudescence of the disease some years afterwards was followed by the birth of another healthy child. Mr. Gant mentioned the possibility of these children exhibiting symptoms after the period of the second dentition.—*British Med. Journal*, Aug. 30, 1873.

31. *Extensive Destruction of the Anterior Cerebral Lobes, accompanied by Aphasia*.—Dr. G. BERGHMAN describes in the third No., Vol. IV., of the *Nordiskt Medicinskt Ark.*, the following example of this: A dragoon, æt. 29, was admitted to the Surgical Department of the Royal General Garrison Hospital on June 28th, 1872, having been kicked in the forehead by a horse two hours before. The frontal bone was broken into several pieces, the brain substance protruded from the wound, and some of it was found scattered about the scene of the accident. The patient was able to sit up in bed while the wound was being dressed, and showed no paralytic symptoms, with the exception of a right facial palsy. He was perfectly conscious, and answered all questions put to him clearly. Pulse 112, full and regular. Next day convulsive movements were observed in both upper and lower extremities, especially on the left side. The patient lay apparently quite unconscious, but yet gave clear answers to every question. Pulse 116, temp. 99.7°. The patient made water voluntarily at 8.30 A. M.; it contained no albumen. On the 30th his state was much the same. No lesion of speech. No paresis except the facial palsy. No lesion of sensation. The tongue, freely movable, did not deviate towards either side. The urine had now to be drawn off by catheter; the power of voluntary micturition, however, returned, and remained until the day of his death, the 5th of July. On this day he became comatose, with stertorous breathing, floccitatio, and convulsive movement of the extremities. The pulse, difficult to count, was about 160, and extremely small. The cerebral substance at the bottom of the wound continued inflamed and stinking. Attempts to swallow were induced by the washing of the wound. The patient died at 3.30 P. M.

A very full account of the autopsy is given. It is mentioned that on the right side of the cerebrum only those parts of the cortical substance lying close to the middle line were damaged, *i. e.*, the olfactory convolution, internal orbital convolution, and the posterior portion of the posterior orbital convolution as far as the fissure of Sylvius. But on the left the whole under surface was involved, and the inflammatory action had spread, not merely outwards and upwards to the third frontal convolution, which was altogether destroyed, softened, and discoloured, but also to the *island of Reil* on this side, which, however, did not present the same degree of discoloration and breaking up. The lateral ventricles, dilated, contained a very large quantity of clear fluid. With these and other extensive injuries of the brain-substance, especially on the left side, there was, as already stated, no aphasia. Two days before his death, indeed, the patient, when asked to what squadron he belonged, answered, "To the Sigtuna squadron," whereas he really belonged to the Upsala squadron. It is to be remarked, however, that another squadron, called the "Sigtuna squadron," actually was attached to his regiment.—*Dr. J. W. Moore's Report on Scandinavian Med. in B. and F. Med.-Chirurg. Rev.*, July, 1873.

32. *Application of Auscultation as an Aid to the Diagnosis of Stone in the Bladder.*—Dr. HENRY H. HEAD, Physician to the Adelaide Hospital, states (*Irish Hospital Gazette*, July 15, 1873), that he sounded a gentleman's bladder and was pretty sure that he detected a stone, but did not think the evidence absolutely conclusive, when it occurred to him to try auscultation, to see if it would assist his diagnosis. He accordingly applied one end of an India-rubber tube to the top of the catheter with which he was examining him, and the other to his ear, and at once heard, with the greatest distinctness, the instrument strike the stone. The evidence afforded was so conclusive, that there could no longer be any doubt on the subject.

He adds: since "I saw the above case, I have performed many experiments with substances of various sizes and degrees of hardness, placed in a bladder distended with water, and have never failed to discover them by the sense of hearing, which I have found much more delicate than that of touch. Even a small piece of soft chalk, not larger than a pea, can be most easily detected; the slightest touch of the catheter or sound being conveyed to the ear, when it could not be recognized by the hand.

"I feel confident this method of applying auscultation will afford most material aid to the surgeon in forming a diagnosis in doubtful cases."

The apparatus used by him consists of a small vulcanized India-rubber tube, about eighteen or twenty-four inches long, to one end of which an ivory ear-piece is attached, similar to that used for ear trumpets; and into the other end is inserted a metallic plug, with a tapering end protruding, which should be pressed tightly into the canal of the catheter; or, if a solid sound is used, the end of the tube, without the plug, may be fastened on it.

33. *Antiseptic Treatment of Wounds.*—Prof. JOHN WOOD, in his admirable Address on Surgery before the British Medical Association at its recent meeting, remarked: "Pyæmia, septicæmia, and erysipelas are undoubtedly the greatest troubles in modern surgery." . . . "When, therefore, a system of dressing wounds is brought before us, sanctioned by worthy names and supported by the results of cases, offering a means of escaping these terrible enemies, it is our bounden duty to give it a fair and full trial.

"Such is the antiseptic system of dressing wounds originally developed by Le Maire in 1860 and 1865—in the use of coal tar, and its derivative carbolic acid, as an application to wounds. As long ago as 1815, French chemists had proved the antiseptic qualities of oil of tar. . . .

"A great impulse was given in this country to the use of carbolic acid by Professor Lister, in February, 1867, well known to the Association from the exposition of his method by that talented surgeon to the meeting at Plymouth. Since that time I have given his system, I believe, a fair trial at King's College Hospital. At the same time, and under the same conditions as far as could be obtained, I have employed the solutions of carbolic acid in oil and water, and

those of metallic salts, as well as other antiseptic substances, such as chlorozone, etc., but without the elaborate attempts to exclude the unpurified atmospheric air which Lister deems essential. . . .

"As an experimental and scientific mode of research, which may turn out to be also a converging line in Surgery, I have the highest possible respect for Professor Lister's system of treating wounds.

"Upon his theory of germs, it is consistent and simple enough; but it is as a practical method of treating open wounds, available under ordinary circumstances in hospitals and private practice, in emergencies, and on the battle-field, that it must be estimated and will ultimately take its place; and it is with that view that I have put it, as far as possible, to the test. I began it at a time when the hospital was in a good hygienic condition, and the cases for that time did admirably. I had some cases quite equal to any described by Professor Lister himself. I, at the same time, tried the application of dry lint, without any moisture whatever, to the wound, and in many cases, especially in breast cases, the results were also perfect. In one breast case union by adhesion occurred throughout the wound. I also tried the application of the chloride of zinc solution in the manner originated by Mr. De Morgan, and very good results ensued, viz., healing with the formation of little or no pus. After about six months, there came into the hospital a very unfavourable change, and, from inquiries made at the time, I concluded that a similar condition prevailed in most or all the London hospitals. Erysipelas and its concomitant pyæmia began to show themselves, the former not springing up in the hospital itself, but imported with patients. The wounds now began to suppurate more, primary healing was less common, and the erysipelatous blush appeared with blame-worthy impartiality in cases treated in all kinds of ways, and almost as impartially on my own antiseptic side of the hospital as on my colleague Sir William Fergusson's non-antiseptic side. But this I feel bound to say, that there was little or no putrefaction, as evinced by the odour, in any of my cases, which my eminent colleague shrewdly attributed to the carbolic smell overpowering all others. Upon this point, however, I must say I did not agree with him. I had one case of amputation of the thigh for a tumour of the lower end of the femur, in a man about 60. I treated it by Lister's method, carefully carried out, and, from beginning to end, there was very little discharge and no putrid or offensive smell whatever; but the wound did not heal, the end of the bone remained unadherent and devoid of granulations, and the man lingered for two months in a declining and emaciated state, and finally succumbed to chronic pyæmia with secondary abscesses in various parts. The occurrence of many other cases similar in character to this has convinced me that the agencies, whatever they are, in pyæmia, operate in the general system, or, if through the atmosphere, in other channels besides the wounded part, as in cases of pyæmic poisoning from deep internal glandular pus deposits and in other acute and chronic tubercular affections.

"Some time afterwards I had a case of compound fracture of the tibia and fibula, with a limited aperture in the skin, in a man nearly 70 years of age. I put it up carefully in Lister's method, carbolic spray, prepared gauze and jaconet, complete. On dressing it several days afterwards, suppuration was found to have occurred, and the pus had accumulated considerably in the dressings. The treatment was continued, and kept the wound free from all unpleasantness, but still the amount of suppuration was very considerable. There was burrowing of pus along the muscles and bones, and a total want of union. In this case I was ultimately obliged to amputate below the knee. The amputation wound was also treated antiseptically, but still the amount of pus was considerable, and although from the man's age and reduced condition, the progress of healing by granulation was slow, the case did ultimately exceedingly well, and made an excellent stump.

"In some cases of psoas abscess treated by Lister's method we had marked success so long as the hospital was healthy. When erysipelas and pyæmia appeared, however, we had others in which the pus in the abscess became putrid and offensive after the first evacuation under the spray and with all the precautions, and I was obliged to make free openings and introduce drainage tubes

through which the abscess could be washed out thoroughly with antiseptic. Such cases show that we cannot without danger depart, in the generality of wounds, from the old rule of providing a free exit for all purulent and offensive discharges, and, for the want of this, the exclusion of air is not a sufficient compensation. I cannot, consequently, approve of the plans originated by Baron Larrey and followed by Gosselin, and, more lately, by J. Guerin and Maisonneuve, of "occlusion pneumatique" the amount of resemblance to which, in Lister's method, constitutes, it seems to me, some part of its deficiencies. To a great extent, this objection also exists to the plan followed during the second siege of Paris by Alphonse Guerin, of using thick investments of compressed cotton-wool after washing the wound with alcohol, and then leaving it, without disturbance or removal of the deeper layers, for periods varying from a fortnight to two months, or even more. This plan, for keeping from the wound injurious atmospheric influences seems to have been deduced from Professor Tyndall's experiments upon the purifying results of the cotton filter of Pasteur. It was shown by Hervey that, as used by Guerin, it neither prevented putrefaction and fetor in the wound, nor the formation of abundance of microzoa therein. Here again, we have instances of the propriety of that regular and systematic inspection of wounds which the practice of hermetically sealing them up prevents us from obtaining.

"In clean incised wounds, where the formation of pus is not likely to occur, as in some plastic operations, the hermetically-sealing plan will no doubt maintain its position in general use in its most useful form of collodion. But, when suppuration ensues, it must be got rid of. Its absorption by dry earth, as advocated by Dr. A. Hewson of Pennsylvania, has the disadvantage of being dirty and offensive to the patients, and of obscuring by its colour the natural appearance of the wound when in contact with it, but as a substitute when better absorbents cannot be obtained, it seems to be of some value. Much the same may be said of charcoal. When this substance is combined with coal-tar, however, as in the way advocated by Dr. Beau, it would seem that a great part of the antiseptic vapour would be absorbed by the charcoal, and the two remedies to some extent thus neutralize each other."—*Brit. Med. Journ.*, Aug. 9, 1873.

34. *Isolation and Treatment of Wounds.*—MR. GEO. W. CALLENDER described to the Surgical Section, British Med. Assoc., a plan of treatment which he had followed for several years in St. Bartholomew's Hospital, and of which the results were at least as satisfactory as those following the employment of the antiseptic method, while it was much more simple. In 199 cases treated in this way there had been six deaths; and in 28 cases of compound fracture, and 33 of amputation (including 14 of the thigh), there had been no deaths. The author insisted on the removal of foreign bodies, and expressed his objection to ligatures, as being in fact foreign substances. Instead of tying arteries he used torsion. After all bleeding had stopped the wound was washed with carbolic acid (1 in 20 of water), closed with silver sutures, and fitted with a drainage-tube (a suitable form of which Mr. Callender had had made). After this, layers of lint dipped in carbolized oil (1 in 12 of olive oil) were laid over the line of incision or over the laceration; and over these a quantity of cotton-wool for warmth and protection. After the dressing the wound was placed in such a position as to secure absolute rest. After the first day, the drainage-tube was generally removed, and the dressings were applied as before. No special provision was made for excluding the air. As far as practicable each case was placed between patients free from wound or discharge, and the wound was cleaned by means of a camel-hair brush, with a solution of carbolic acid in five parts of spirits of wine. Mr. Callender remarked that in this plan antiseptic treatment was used in a limited way, and that the results which he brought forward showed that, with the exercise of proper care and supervision, patients did as well in a large hospital as anywhere else. Sir John Rose Cormack (Paris) said that he had, during the two sieges of Paris, treated a great variety of the worst description of shot and shell wounds, and he had seen similar cases treated contemporaneously by others, and his firm conviction was, that the success was not so much with the skilful operator as with the man who patiently and with

scrupulous care conducted his dressings, and attended to the hygiene of his patients. Mr. Lister's system was not adopted in the American ambulance, nor in either of the hospitals of which he (Sir John Cormack) had charge; and yet in all these the success was very remarkable. The system which Sir John Cormack adopted (varying it according to circumstances) was to tide over the period of shock by large opiates; to use in all the dressings abundance of *étoupe goudronnée* or oakum, which, from its antiseptic properties and its power of absorbing the discharges, as well as its elasticity, was used universally in the American and English ambulances. He gently washed the wounds and the surrounding parts at each dressing with creasote water, to remove adherent noxious discharges; and the crevices were carefully cleansed by injecting the same fluid. When necessary and at all possible, incisions were made, and drainage-tubes were used to prevent the accumulation of discharges in crypts or pouches. The very simple and effectual method suggested by Mr. Callender, of lightly brushing out the cavities with a camel-hair pencil, would no doubt have answered as well as, and in some cases perhaps even better than, the syringe. He attributed much of Mr. Lister's success to the general medical and hygienic treatment which that gentleman strenuously carried out, rather than to the niceties and complexities of his special system. In support of his views, Sir John referred to some of his cases of lacerated wounds and amputations, in which, he believed, recovery was mainly attributable to the system which he briefly described, and in some instances, to the additional precaution of changing the personal and bed linen once, and sometimes even more frequently, in the course of the day. This had been done in one case where the patient had seventeen lacerated wounds, and made a good recovery. An additional precaution was generally taken—to wit, having the patients carried out on stretchers to the free breeze of the garden, whenever the weather permitted, so that their bedding and the wards might be cleaned. In addition to this, the floors and beds were regularly watered with creasote water several times a day. Mr. Gant (London) was of the same opinion with regard to Mr. Lister's plan. Mr. Green (Bristol) had found that many years of large hospital experience only wedded him the more firmly to the doctrines long since taught him by Mr. Lawrence—namely, extreme simplicity in the treatment of wounds, and above all, a free outlet for discharges. Mr. Cresswell (Merthyr Tydfil) and Mr. Hemingway (Dewsbury) also spoke. Mr. Lund (Manchester) said that Mr. Callender's method was really antiseptic, while its simplicity was to be admired. Mr. Hey (Leeds) had given Mr. Lister's plan a fair and unprejudiced trial, but repeated experience of it had convinced him that even when carried out carefully by Mr. Lister's own pupils, the method showed no superiority over a simple plan of treatment such as that employed by Mr. Callender. He had even seen union delayed in wounds by reason, as it seemed, of the employment of the more elaborate antiseptic dressings, although in other cases it answered all expectations. Mr. Callender, in reply, pointed out that his plan involved absolutely no precautions against the admission of air, and could not, therefore, be considered as a proof of the superiority of Mr. Lister's method of "antiseptic" treatment.—*British Med. Journal*, Aug. 30, 1873.

35. *Abdominal Aneurism successfully treated by Proximal Pressure on the Aorta*.—Dr. EDWARD HEADLAM GREENHOW reported to the Royal Medical and Chirurgical Society, May 27, a case of this. In the year 1864 Dr. Wm. Murray communicated a case of the same, successfully treated by the same plan. The patient remained well for six years, and then died of a second aneurism. It was found that the remains of the original aneurism consisted merely of a fibrous mass, and that complete collateral circulation had been established by the enlargement of vessels both on the outside and inside of the abdominal cavity. Last year a similar case, cured by the same means, was communicated to the Society by Dr. Moxon and Mr. Durham, of Guy's Hospital. These are the only two such cases which have as yet been fully recorded; and the author trusted that the report of a third case would not be considered superfluous, more especially as in this latter some of the results of the compression of the aorta appeared to have an interest apart from

that belonging to the cure of the aneurism. Christopher F., aged 28, warder in the House of Correction at Kendal, was admitted into the Middlesex Hospital, under Dr. Greenhow's care, on May 20, 1872. He was a strong-looking man, and his health had been good until December, 1868, when he was on board H.M.S. *Princess Charlotte* as an able-bodied seaman. Whilst drawing water from alongside he suddenly felt something give way in his abdomen. Was soon after invalided, and on his return home he obtained employment as warder. In December, 1871, he again began to suffer and lose strength. On admission, he complained of pain in the abdomen and loins, shooting downwards to the groins and thighs. A somewhat globular pulsating tumour, about the size of a large orange, was found in the abdomen, immediately above the umbilicus. It extended more to the right than to the left of the median line, and beat forcibly with an expanding lateral as well as with a forward impulse. Firm pressure over the aorta above the tumour, when the patient was sitting up, stopped the pulsation for the time being. The medical staff of the hospital having agreed with the author as to the nature of the tumour and the means to be attempted for its cure, Mr. Hulke undertook to apply the tourniquet. May 25: Chloroform having been administered, Lister's tourniquet was screwed down between the tumour and the xiphoid cartilage until pulsation ceased both in the tumour itself and in the femoral arteries. On account of vomiting the pressure was withdrawn after three-quarters of an hour. The impulse remained as before, but the tumour felt rather more solid. 27th: When the patient was thoroughly under the influence of chloroform, Mr. Hulke applied the tourniquet with the same effect as before, and with two brief intermissions the pressure was maintained during four hours. After some time there appeared marked lividity of the lower extremities, which, as well as the lower half of the abdomen, became quite cold. Temperature taken between the toes was 90°. Sphygmographic tracings of the radial pulse showed increased arterial tension. The breathing became very shallow and gasping. Pulse from 100 to 120, respiration from 44 to 56 per minute. The removal of the pressure was immediately followed by the subsidence of all these symptoms. The pulsation in the tumour was decreased, the forward impulse being much less forcible and the lateral expansion only slight. For several days the patient suffered much from vomiting, the vomit containing altered blood, and from pain, numbness, and coldness in the lower extremities, more particularly in the right limb, which gradually disappeared as the circulation became re-established. The impulse in the aneurism very greatly decreased, until on June 10 it could scarcely be felt, and the patient was allowed to sit up for a short time. June 25: The pulsation in the tumour having decidedly increased again in force during the previous week, the tourniquet was once more applied, so as thoroughly to compress the aorta, and the pressure was maintained for three hours almost continuously. The pulse and breathing showed the same characters as during the former operation, and there was the same coldness of the lower extremities and of the right more than the left foot. When the tourniquet was removed there was forward pulsation of the tumour, but no lateral expansion, and the tumour felt firmer and more solid. During several days the vomiting and coldness of the extremities continued as before. The urine was albuminous for two days. The impulse in the aneurism continued to diminish until July 1, when it could not be seen, and scarcely felt. On July 14 the patient was well enough to be discharged home to Kendal. September 20: In accordance with Dr. Greenhow's request, the man returned to show himself. No pulsation was found in the seat of the aneurism, nor was there any distinct tumour remaining; but above the umbilicus, to the right of the median line, was an undefined somewhat movable hardness. No pulsation could be detected in the aorta from an inch above the umbilicus downwards, nor in the femoral, popliteal, or anterior tibial arteries. Mr. Noble, of Kendal, who sent the patient to the hospital, wrote to Dr. Greenhow quite recently to say that the man was in perfect health. It would appear certain from this case, taken in conjunction with Dr. Moxon's and Mr. Durham's, that the process of cure by coagulation of blood in the sac of the aneurism is not necessarily a rapid process, as it was in Dr. Murray's

case, but may last during many days, and sometimes even for weeks. The direct effects of the pressure upon the pulse and respiration were very remarkable, and not less so the secondary effects of the disturbed circulation on the stomach and kidneys, producing the hæmatemesis and albuminuria which followed the operations. The occurrence of such symptoms would seem to suggest that the intense arterial distension caused by the treatment might be attended by serious danger to persons suffering from any kind of organic disease, especially degenerative disease of the arteries.

Mr. HOLMES did not think that the operation was free from danger; in some cases it had been followed by death. Mechanical lesions of the gravest kind were often produced. He did not think the treatment should be employed in all cases. If an aneurism was rapidly enlarging it might be resorted to; but it was beyond justifiable surgery to do so if milder means would do. There was distinct evidence of injury from the violent pressure on veins. In three cases death had occurred. Then the prolonged application of chloroform was in itself a source of great danger. He thought a surgeon ought to consider if abdominal aneurism could not be cured by milder means. Low diet and rest often ameliorated. In other cases it was amenable to slow pressure, as by a pad or finger for a portion of the day, and without the danger attending more forcible pressure. The latter was more efficient as well as more dangerous. Though the three successful cases had been reported, yet there were others which had been unsuccessful. As to the coagulation of the blood, he thought there were two ways in which it might occur—firstly, gradually, as shown in Mr. Durham's and Dr. Moxon's case, in one month; secondly, by the impaction of a clot in the artery, as in Dr. Murray's case.—*Medical Times and Gazette*, July 19, 1873.

36. *Treatment of Axillary Aneurism.*—Prof. T. HOLMES, in one of his admirable lectures on Aneurism now in course of delivery before the Royal College of Surgeons of England, laid down the following propositions which he thinks are established by the facts which he brought forward in reference to axillary aneurism.

1. That there are a great number of these aneurisms, both traumatic and spontaneous, which are amenable to gradual intermitting pressure, when carefully applied to the artery above the tumour.

2. That in cases where this is not possible, from the pain which the patient experiences on pressure, the application of rapid total compression under anaesthesia may effect a cure.

3. That the ligature of the subclavian artery is so dangerous an operation, both from its own risks and from the proximity of the sac, that it ought to be restricted to cases where pressure has failed, and to those in which, from the size and rapid growth of the axillary tumour, the surgeon thinks pressure unadvisable.

4. That the old operation is to be preferred to the ligature of the subclavian in cases of ruptured artery, and that it may be practised in cases where, from the elevation of the shoulder or from the extent of the tumour, the surgeon would find it difficult to tie the subclavian, or fears in doing so to injure the sac; but that the anatomical relations of axillary aneurism render this a peculiarly hazardous proceeding, and the surgeon should always be prepared to amputate if necessary.

5. That in very large axillary aneurisms, if any treatment be adopted, the arm should be amputated at the joint after ligature of the subclavian.—*Med. Times and Gaz.*, Aug. 23, 1873.

37. *Vertebral Aneurism.*—Mr. T. HOLMES, in one of his recent lectures on the Surgical Treatment of Aneurism (*Lancet*, July 26, 1873), presented the following conclusions to which present experience points on the subject of vertebral aneurism:—

1. A traumatic aneurism may be taken to be vertebral when it is situated in the course of that vessel, and when its pulsations are not commanded by compression of the lower part of the common carotid.

2. When a traumatic aneurism is situated as above, and its pulsations are commanded, however completely, by pressure on the common carotid low in the neck, it ought not to be treated as being carotid, or as affecting a branch of the carotid, unless it is clearly proved that its pulsations are stopped by pressure applied above the level at which the vertebral ceases to be compressible—*i. e.*, above Chassaignac's "carotid tubercle."

3. An aneurism diagnosed as vertebral may be treated by compression (gradual or rapid, as the case demands) of the root of the vertebral artery in the neck, if this is found feasible.

4. If indirect compression will not stop the pulsation, or if it cannot be borne, the tumour should be subjected to direct compression and refrigeration, to which internal remedies may be added; and possibly the subcutaneous injection of ergotine may be of use.

5. If these means fail, and the tumour appears likely to burst, or if it has burst, the sac should be opened with all due precaution, and an attempt made to tie or plug the wounded artery.

6. A wound known or suspected to be of the vertebral artery should be treated either by direct pressure or by ligature of the vessel in the wound.

38. *Results of Excision of the Head of the Femur.*—In the third sitting of the second conference of the Congress of German Surgeons (*Berliner Klinische Wochenschrift*, May 31, 1873), Herr LANGENBECK presented a case of resection of the head of the femur, which was interesting because it had been performed in the presence of many members of the congress at its meeting in the previous year, and because the suppuration in the hip-joint had been induced by an attack of gonorrhœa, followed by suppurating bubo. The patient, aged twenty-two, had contracted gonorrhœa in April, 1870, having previously enjoyed perfect health. A bubo appeared which suppurated, was opened, and then healed, after an interval of fourteen days. The patient returned to his work, but remarked in Oct. 1871, slight tenderness in the groin, an abscess formed, which was opened, and finally the hip-joint became involved. In Jan. 1872, he was received into the Jewish hospital with evidence of suppuration in the joint, extension was applied which diminished the pain, but the suppuration increased, and hectic followed. In April an examination under chloroform was made; the joint was found in a carious condition, and the partially absorbed head removed through a longitudinal incision. Almost no blood was lost. On account of a large bed-sore on the sacrum, the after-treatment was conducted with the patient lying on his face. At the end of June the operation-wound and bed-sore had both healed, and the man was allowed to go about with an apparatus. In Dec. 1872, the instrument was laid aside, and the patient was able to move about with a high heel. Soon he could walk for hours at a time without difficulty. The shortening amounted to four centimetres. Around the acetabulum was a large mass of callus with which the femur seemed to articulate. The motions in the joint were impaired, but still considerable.

In the discussion which followed the presentation of the patient, Professor HUTER said he had thrice had occasion to examine the healing process of an excised hip on the dead body. In both cases recovery had reached a certain point; the children had left their bed, and could go about to some extent, with, however, fistulous openings, which remained unclosed; death occurred from amyloid degeneration of the viscera. In both cases the trochanter minor rested against the acetabulum. In other cases in which complete cure occurred, he believed the same relation existed, the usefulness of the limb was very encouraging. Some months ago he removed the greater part of the great trochanter, in a case of resection of the hip, and four weeks after the operation the patient was not only able to rise out of bed, but to rest on the limb in walking. In another case, observed some nine days after the operation, the trochanter minor seemed to rest against the acetabulum, and the patient, sixteen years old, could walk a German mile on foot with no assistance but a stick.

Professor VOLKMANN considered it of the last importance to prevent adduction of the limb after resection, as the end of the resected bone had no point of resistance, and was dragged up more and more on to the crest of the ilium.

He therefore, after the first week, strongly abducts the limb, so that the end of the resected bone rests in the acetabulum. He does not recommend it at an earlier period, as the pressure of the bone surfaces against each other might be then injurious, and their healing retarded. During the early period he uses extension or gypsum bandages. Professor Volkmann explained the occurrence of the suppuration in Langenbeck's case, by the pus passing into the bursa of the psoas and iliacus muscles, and so into the joint.

LANGENBECK stated that he had, during the previous year, observed two other cases of secondary suppuration of the hip-joint after bubo. The first patient came to hospital with extensive suppuration round the joint, and died from exhaustion. The joint was completely destroyed; the capsule had given way in several places, so it was impossible to tell at which point the suppuration had originated, or entered the articulation. The last case was still under treatment; the symptoms pointed clearly to pus in the joint. Langenbeck thought it possible that the inflammation might have travelled through the iliac bursa into the joint, but considered it more probable that the lymphatic vessels were the means of communication. That there is a close relation between the lymphatics of the joint and of the groin, seems to be proved by the frequent occurrence of swelling of the inguinal glands, as a consequence of recent coxitis.

Professor LUCKE said that Langenbeck's account reminded him of a patient with deep abscesses after bubo in the groin stretching up behind Poupart's ligament. Suddenly, symptoms of inflammation of the hip set in, with septicæmia; the patient died. The examination showed that the hip-joint was filled with pus, and its capsule perforated.

Speaking of Volkmann's suggestion to abduct the limb after resection of the hip, and in that way maintain the length of the extremity, Professor BILLROTH observed that this method was usually successful, as he could testify from his own experience in a case of ankylosis with actual shortening. After breaking down the ankylosis, he extended and fixed the limb in the strongly abducted position; recovery took place in a gypsum bandage, and the result was especially favourable.—*London Med. Record*, July 16, 1873.

39. *Treatment of Effusions into the Knee-joint by Aspiration.*—M. DESPRÈS, in the name of a committee consisting of MM. Veneuil, Cruveilhier, and himself, made a report to the Surgical Society of Paris (May 14, 1873), on the memoir of M. Dieulafoy, on the above subject. M. Desprès stated that the memoir was founded on twenty-two cases, in which sixty-five punctures had been made without ill effect, for serous, sero-purulent, and purulent effusions. According to the Committee if the duration of the treatment be considered, the new method generally does not effect a more speedy cure than the ordinary treatment. In some cases, however, the rapidity of the cure was remarkable. The mean quantity of liquid abstracted by aspiration was in traumatic hydrarthroses 60 grammes, in rheumatic hydrarthroses 70 grammes, in purulent effusions 40 grammes. In several of the patients the effusion has been reproduced and the puncture repeated three or four times.

M. Desprès declares that in traumatic hydrarthroses, the old method gives as good results as the aspiratory method. In rheumatic hydrarthroses the aspiration is useless. In hemorrhagic arthritis blisters should be preferably employed. In chronic hydrarthroses which resist ordinary treatment, aspiration may be usefully employed. As to sanguineous articular effusions, in which M. Dieulafoy has not applied his method, it would be dangerous to puncture them.

In the discussion which followed the reading of this report, and in which MM. Blot, Dubreuil, Verneuil, Demarquay, Dolbeau, Pans, Marjolin, Duplay, See, Tillaux, and Guyon took part, the conclusions of the committee were generally approved. Puncture of the knee was considered as a very serious operation and might even be followed by fatal results, of which M. Debreuil related an instance.

In the opinion of nearly all the members who spoke, the ordinary method should be preferred to the one proposed by M. Dieulafoy. It cures as effectually and without danger. The acute pains which accompany acute hydrarthroses are

more effectually combated, according to M. Verneuil, by the immobilization of the limb, than by aspiratory puncture, for if this operation is followed by instantaneous cessation of the pain it reappears, in a few hours as intense as previously.—*L'Union Médicale*, 23 Aug. 1873.

40. *Resection of the Ankle-joint and Os Calcis*.—In an inaugural dissertation (Greifswald, 1872) Dr. ALBERT KELLER gives an historical account of resections in general, and also refers to Read's case of so-called excision of the ankle after Fontenoy, which he characterizes as a mere extraction of fragments of bones after gunshot injury to the joint.

Langenbeck, since 1850, performed the operation four times in his private practice, in all cases carefully preserving the periosteum. Very complete reproduction of bone ensued, and in two cases the joint recovered perfect motion. Neudörfer, in the Schleswig-Holstein war, operated once, and Langenbeck five times. In the Bohemian and the Franco-Prussian wars, the author asserts, excision of the ankle-joint was frequently performed, and with such successful results that the operation may now be considered as fully accepted both in war and peace surgery.

The author refers to two successful cases, one performed by Mr. Holmes, and the other, in 1857, by Dr. Murray, of Belfast.

It is unnecessary to detail the indications which the author, following his teacher, Professor Hueter, gives for the performance of the operation; nor the operative procedure itself, which is by the lateral L-shaped incisions, embracing the malleoli, as originally recommended by Moreau père.

The after-treatment should commence on the operating table, by the careful cleansing of the wound, and passing, after suturing the upper portions, a drainage-tube from side to side of the wound cavity.

The foot should then be held slightly extended, so that the cylinder of periosteum is put upon the stretch, and a gypsum bandage is to be forthwith applied.

The reproduction of bone is rapid, so that by the end of eight days a firm case of periosteum, with newly deposited bone, is often formed. Sometimes trouble is experienced from the excessive amount of new osseous tissue which is formed.—*London Med. Record*, July 16, 1873.

41. *Treatment of certain Forms of Bronchocele by Injections of Iodine*.—Dr. MORELL MACKENZIE stated that in a former paper he had described in detail the various methods applicable to the several kinds of enlargement of the thyroid gland. In discussing the treatment of fibrous bronchocele in the article referred to, he did not do justice to the method recently introduced by Prof. Lücke, of Berne. A larger experience, made under more favourable conditions, had convinced him that the treatment of certain forms of bronchocele by the subcutaneous injection of iodine into the substance of the enlarged gland, was of the greatest value. The following was the plan of treatment, which, in accordance with Dr. Lücke's recommendation, the author had employed: Thirty drops of the officinal tincture of iodine were injected into the substance of the gland once a week for the first two or three weeks, and afterwards once a fortnight, as long as was necessary. It was well to give iodide of potassium internally, at the same time; but no medicine was given to any of the patients whose cases were now related. The advantages of the treatment were, that it did not cause any constitutional disturbance or local irritation (suppuration). In this respect, it was preferable to treatment by setons and caustic darts. The only disadvantage of the method was its slowness; this, however, could scarcely be considered a drawback, except when the enlarged gland caused urgent dyspnoea. The cases which were briefly related had been taken indiscriminately as they presented themselves, or were found in the case-book of the Throat Hospital on July 24th. Of the sixteen cases, fourteen were fibrous, and two adenoid, or soft. Fourteen patients were females and two males. Eleven were completely cured, in four a considerable reduction resulted, and one case completely resisted treatment. In one case the neck was reduced by $3\frac{3}{4}$ inches in less than six months; in two cases a reduction of

2½ inches took place. The duration of treatment varied from one to eight months, the average being four months. The author concluded by remarking that the treatment of cystic cases by injections of iron, as previously recommended by him, was, of course, much more rapid, and therefore more striking; but the fibrous cases were undoubtedly the most difficult to treat of those varieties met with in practice. Dr. Mackenzie added that suppuration had not occurred in any case where the injection had been made into the gland itself. The failures of the treatment were 5 per cent. Mr. Meade's treatment by division of the fascia in the central line, where symptoms of dyspnœa indicated mechanical pressure, had been found successful in alleviating this.—*Proc. Brit. Med. Ass., in Brit. Med. Journ., Aug. 30, 1873.*

42. *Nine Cases of Colotomy in Females*, by CHRISTOPHER HEATH.—Two operations were undertaken for cancer of the rectum, causing obstruction, which had existed many days; both patients died. Three operations were performed for scirrhus in an earlier stage, before obstruction had occurred; and of these one died and two recovered—one of the latter dying seven months afterwards, and the other being now alive and well, seven months after the operation. Two operations were performed for syphilitic ulceration and stricture; both recovered, and are alive now. One operation was performed, as a last resource, in a patient worn out with extensive fistula and ulceration (probably syphilitic) before she applied for relief, and proved fatal. The operation was performed for the relief of a recto-vesical fistula, and was perfectly successful. The result therefrom was four deaths and five immediate recoveries. Mr. Heath appended some observations on the operation and its results, urging its earlier adoption in cases of obstruction and intractable disease, and showing the slight risk to the patient the operation *per se* inflicted.—*Proc. Brit. Med. Ass., in Brit. Med. Journ., Aug. 30, 1873.*

43. *Radical Cure of Rupture*.—Prof. JOHN WOOD, in his Address on Surgery, remarked, "I have long thought that we might, in favourable cases, safely do more than we now attempt, to prevent a return of the protrusion after the operation for the relief of strangulation. After performing operations for the radical cure more than two hundred times, I had grounds for the belief (which other operations on the peritoneum also favoured) that in a healthy subject, the peritoneum might be dealt with as freely and as safely as any other tissue; and also, that the chances of bad results from peritonitis would depend upon the injury sustained by the bowel in strangulation, rather than upon any way of dealing with the peritoneal sac and parietes after the strangulation had been relieved, provided that due drainage be secured. In cases where the bowel and omentum are congested only, and most likely to recover when placed into their natural cavity, especially in young and healthy subjects, I concluded that the attempt would be justified, and would probably be successful. If so, the advantage of preventing a lifelong trouble by the operation which relieves strangulation is obvious."

In answer to the objection made to his operation that evidence is wanting as to the permanency of the cure, he states "out of 188, most of them unselected cases of inguinal hernia, of which I have notes (including 7 females and 4 cases of double rupture, both operated on), in 107 cases the results are pretty perfectly known. I find that 51 of these were more or less unsuccessful: 42 returned in the first year after operation—that is, the patient could not do without wearing a truss after the first year. Of these, by far the greater number were so much improved that they were made comfortable by a truss, which was not the case in most instances before the operation. Some, but not many, were as bad as before the operation. Mr. Kingdon, of the City of London Truss Society, has kindly forwarded to me the names of twelve of those who had applied to that institution for the supply of a truss after an operation at my hands.

"56 out of the 107 were cases which continued to be successful subsequently to a year after the operation, as ascertained either by direct examination by myself, other surgeons, or satisfactory to the patient himself, and either wear-

ing no truss at all, or only occasionally, as a precaution, after the first year from the operation. Of these—7 were noted from thirteen to twenty-one months after the operation: 7 two years; 7 three years; 7 from four to six years; 7 from six to eight years; and 4 from nine to eleven years after operation. Reckoning operations on both sides and repetitions of the operations, I have done the operation more than two hundred times. Out of these, I have had three deaths; one from pyæmia, one from erysipelas, and one from peritonitis. These have been made public to the profession on more than one occasion, because I judged it right and fair that in an operation of this kind the facts should be made known as far as possible. In the last case, as shown by the *post-mortem* examination (published in the *Medical Times and Gazette* in 1866), the peritonitis was found not to have originated in the parts operated on, but in a knuckle of bowel which had been lodged in the hernial sac before the operation, while the patient was wearing a strong truss. The cases in which any signs of peritonitis were observed were not more than about twenty in the whole number. One and a half per cent. is not a high average of deaths from surgical accidents, and there are very few operations of like kind, as, for example, for the removal of deformity, the cure of prolapsus of viscera, or of hæmorrhoids, which could show more favourably either in this respect, or in respect to the somewhat severe test of the length of time in which they have been known to be without a relapse after the operation. And since 42 out of the 51 known unsuccessful cases proved to be so within the first year after operation, and most cases were examined once or more at various intervals of time after the operation, I think that, in respect to this point, we have a right to claim the probability of more and the certainty of at least as many good results for the 81 of which I have not been able to get notes after the first twelve months, as for the 107 in which I have done so. Under the age of twenty-one years the results in known cases are much more satisfactory. But of dry statistics you will think that I have given you, perhaps, more than enough.

“The determination of the question as to whether the operation for the radical cure is an appropriate alternative to a life-long wearing of a truss, and a valuable supplement to the slow and very uncertain cure by truss pressure, will continue to depend on the age, habits, circumstances, mode of life, and, to some extent, the cruel experience of trusses and wish of the patient after having the matter fairly put before him, and, perhaps nearly as much, upon the anatomical knowledge, skill, energy, and experience of the surgeon, or his disposition to that finality frame of mind to which I have alluded. In any case, whether universally or only occasionally resorted to, it forms, I think, a valuable addition to the resources of surgery.—*Brit. Med. Journ.*, Aug. 9, 1873.

44. *Case of Retention, followed by Suppression of Urine, lasting seven days; Recovery.*—Dr. S. T. KNAGGS relates (*Dublin Journ. Med. Sci.*, July, 1873) a case of this and remarks: “This case is remarkable, from the fact that the patient, a broken-down, debilitated subject, survived seven days without passing a drop of water from his urinary bladder, and ultimately recovered. It possesses a further interest, from the fact that nature came to the rescue of the physician, and indicated a rational procedure in the treatment. The gastrointestinal tract and the skin took on vicarious action, as was indicated by the copious watery vomitings and profuse perspirations exhaling a peculiar urinous odour. These organs (stomach, intestines, and skin) voluntarily gave their assistance to the kidneys, and performed their functions, while their (the kidneys’) portals were stopped, and thus relieved the blood of urea and such effete products as would have accumulated in the system, and have literally poisoned the patient.

45. *Onychia Maligna.*—In our number for April last, page 551, we noticed the successful treatment of this disease by Prof. Vanzetti by the local application of nitrate of lead. Dr. WM. MACCORMAC, in a paper read before the Surgical Section, British Medical Association, fully confirmed the efficacy of this treatment. Dr. M. stated the disease was very common in Belfast, affecting principally the girls employed in flax-spinning mills. During the ten years from June, 1863,

to June, 1873, there were 217 cases of this malady among the patients of the Belfast General Hospital, being 2.2 per cent. of the total surgical out-patient cases; 115 occurred in girls between the ages of ten and fifteen, and 63 between the ages of fifteen and twenty. One hundred and eighty-four were mill-workers. Dr. M. had had no opportunity of trying Dr. V.'s treatment, but at his (Dr. M.'s) suggestion, it had been used by Dr. Scott in fifteen cases in the Belfast Hospital, with most satisfactory results. According to Dr. Scott, from fourteen days to a month were sufficient for a complete cure. All pain ceased from one to three days after the first application; and the swollen irritable margin of the ulcer gradually disappeared, leaving a healthy granulating sore. —*Brit. Med. Journ.*, Aug. 30, 1873.

OPHTHALMOLOGY.

46. *Pigmentary Disease of the Eye.*—Dr. HIRSCHLER calls attention (*Archiv für Ophth.*, vol. xviii.) to a peculiar kind of pigment deposit which he has met with in the cornea.

Pigmentary deposits in the proper substance of the cornea occur, as a rule, in connection with scars, a portion of the iris being entangled in the cornea; but he refers only to pigment formed on the spot, not to pigment which has wandered into the cornea from elsewhere. The existence of black pigment has been repeatedly demonstrated microscopically in the cornea, as a result of the degeneration of hæmatin in cases of superficial or parenchymatous keratitis; but the occurrence of pigment in such quantity as to be visible to the naked eye, after the subsidence of inflammation, has hitherto almost escaped attention.

Dr. Hirschler's attention was first attracted by dark spots, which he noticed to appear in the cornea during the retrogression of diffuse parenchymatous keratitis, and which he regarded as mere transparent portions—circumscribed gaps in the parenchymatous cloudiness. Later observations induced him to look on them as accumulations of pigment in the deeper layers, masked by the more superficial haze. As he has now observed this in two cases, that is, in three eyes, he thinks that probably the occurrence is more common than the silence of authors on the subject would lead one to expect.

These pigment deposits are met with during the period of absorption in cases of diffuse parenchymatous keratitis, and appear, in conjunction with commencing clearing up of the general haze, at those parts which are indicated by the presence of more numerous and larger newly formed vessels, and therefore more abundantly on parts near the centre of the cornea. Irregularly margined spots or disks, with four or more angles, are formed of the size of small pins' heads, or 2 millimetres (.08 inch) in diameter; or sometimes the spots may be quite circular. The colour is of a deep black, but when looked at from the front the deposits appear less deeply coloured, owing to the haze through which they are seen. If the latter be absent, then the black spots can scarcely escape observation in moderately clear daylight. By focal illumination under all circumstances they can be more closely examined. They are then seen to be situated about midway between the anterior and posterior surfaces of the cornea. When the infiltration of the cornea has become reabsorbed, these pigment-deposits become so apparent, that they may look like bits of coal-dust on the cornea. Under a magnifying power of 20 diameters, the deposits appear made up of a collection of several smaller spots. The centre of the spot is sometimes of a deep black, surrounded by a rusty-brown or deep-red circle; sometimes it is less deeply coloured than the periphery, and is then of a rusty-brown colour, making the whole spot resemble an irregular ring. In one spot, at a somewhat higher level, a deep-red border could be distinguished, but whether this was due to an effusion of blood or to a loop of vessels could not be determined.

Dr. Hirschler considers that there can be no doubt that this deposit of pigment originates from altered hæmatin, and consequently from antecedent effusion of blood into the parenchyma of the cornea. Additional evidence in favour of this was afforded by the presence of newly formed vessels.

Illustrations are given of the appearances of the deposits, and references are made to authorities on the deposit of blood-pigment.

Dr. Hirschler thinks that the long duration of the parenchymatous inflammation is of importance in reference to the production of these deposits. He describes two cases in great detail; but, before doing so, he remarks that, though differing in the mode of their appearance and in their course, the two agreed with the typical examples of the affection in question, inasmuch as, in both, the disease began at the periphery and extended over the whole cornea, and deprived this for a long time of its transparency; that in both a rich vascularity appeared; and that, finally, the duration was very protracted. In both cases there was slight iritis, not producing marked adhesions, but causing an advance of uveal pigment beyond the pupillary margin. In one case a rather considerable corneal staphyloma resulted, in both eyes, from the keratitis. In both cases Pagenstecher's salve was used for more than a year; and he calls attention to the fact that the pigmentation was first noticed after this remedy had been used for some time.

The first patient was a man, aged 24. He had diffuse parenchymatous keratitis, serous iritis, and pigmentary deposits in both eyes.

The second patient was a married woman, aged 29, who had parenchymatous keratitis, episcleritis, iritis in each eye, and pigmentary deposits in the left eye.

In conclusion, the author also calls attention to the complication of the keratitis with recurrent episcleritis, which was met with in the second case. He thinks it deserves more attention than is generally given to it. Dr. Schiess-Gemusens has written to the same effect (*Kl. Monatsbl.* 1871).

Dr. C. RITTER says (*Monatsblatt für Augenheilkunde*, Oct. 1872) that authors are almost wholly silent on the share which the pigment-layer takes in the inflammatory process. In most forms of iritis, the pigment-layer certainly appears to participate in a very slight degree, or not at all; but in certain cases the pigment-cells appear to take the principal part.

He narrates the case of a woman, aged 52, whose right eye had been defective after a blow three years previously. She could count fingers at the distance of a few feet.

The cornea was diffusely opaque in a moderate degree. Behind the cloudy layers, two completely black points could be seen in the layers immediately adjoining Descemet's membrane. One of them was somewhat further from the membrane than the other. Both were at the lower part of the cornea. The size of the two was not alike; the larger had a diameter of about a millimetre (.04 inch). The intensity of the colour was extreme. The deep black paled but slightly at the margin; slight alterations in the tint were manifest also in the centre of the deposits. The vascularity around the cornea was slight; in the cornea itself there were no vessels to be seen. The aqueous humour was not altered, and the colour of the iris was normal. The margin of the pupil was everywhere, however, united to the lens by dense adhesions which were covered with very black pigment. After atropia, the adhesions were more marked; the pupil dilated outwards, and the blue iris-substance was drawn away from the adhesions all round. The adhesions were continuous with the pigment of the iris, and were covered with black pigment, if not made up entirely of pigment-cells. Manifestly the proper structure of the iris was but little affected. The disease originated, at least in great part, in the pigment-layer. The left eye was quite healthy.

Treatment could not be expected to be of much use, as the disease was of long standing, and the patient only attended for a short time.

The author cannot entertain the slightest doubt that the case should be regarded as one of iritis originating in the pigment-layer with secondary corneal mischief. The latter was wholly insignificant, the superficial layers were quite free, and there was not the slightest inequality of the epithelium. The deeper

layers were, it is true, diffusedly cloudy, but nowhere with any degree of intensity.

The two pigment-deposits, just in front of Descemet's membrane, could, without any difficulty, have become detached from the pigment-layer of the iris and have penetrated through Descemet's membrane. The complete resemblance in colour to that of the iris-pigment would confirm the supposition that this was what had occurred. The morbid change in the cornea is explained, partly as a secondary disturbance of nutrition in consequence of the iritis, partly as a deposition from the iris.

How it happens that this form of iritis has not hitherto been specially described, is incomprehensible. The author has not himself before observed it, at any rate so distinctly, but he may have overlooked cases, and his material for observation is not so abundant as is the case in some large cities. He cannot help suspecting that such cases have escaped notice.

He thinks it worth while to give a special name to the disease, and designates it "Iritis pigmentosa;" with more justice, in his opinion, than can be assigned to the name "Retinitis pigmentosa." He cannot, from one case, lay down any rules for treatment or for prognosis.

He protests against Hirschler's view that the pigmentary deposits in the tissue of the cornea in his cases were due to degeneration of hæmatin. Ritter says that the remains of hæmatin would never be of a "deep black," like "coal-dust," but of a reddish-brown colour. He thinks this is sufficient to upset Hirschler's view. He thinks the cases agree with his own, except in reference to the severe corneal affection present in Hirschler's cases. Ritter quotes statements from the narratives of the cases, showing that the iris was affected in each, much as in his own case.

He thinks that the transference of pigment from the iris in the cornea is not at variance with former experience, and that modern researches on wandering cells have removed any appearance of strangeness from his theory.—*London Med. Record*, Aug. 13, 1873.

47. *Inflammation of the Cornea in Affections of the Trigemini.*—Prof. EBERTH, of Zurich, proposes a new explanation of the occurrence of keratitis after section, injury, or disease of the fifth cranial nerve. This pathologist, whose observations and opinions are worthy of the greatest respect, has for some time maintained that the severity of the process in traumatic keratitis depends upon the conveyance of bacteria into the cornea by the foreign body, and not upon the trauma directly. He now describes (*Centralblatt*, July 19, 1873, No. 32) the occurrence of a similar keratitis without any external wound whatever—by the settlement of the organisms in the cornea after section of the trigemini. The exophthalmos, loss of sensibility, diminished nictitation, and the desiccation of the exposed corneal surface lead on to inflammation, with the production of bacteric masses indistinguishable by the microscope from the condition in diphtheritic keratitis. The most superficial puncture of the affected spot causes a rapid extension of the disease. The second element, therefore, which has not been previously recognized in the etiology of keratitis after injury of the fifth nerve—but which, according to Eberth, is essential—is the presence of bacteria in the atmosphere. Both the condition of the globe after the section or disease of the nerve, and the condition of the atmosphere, will of course vary in different cases. The occurrence of the keratitis will therefore be influenced by the degree and extent of the desiccation, the amount of protrusion, and the size of the ocular aperture. And, on the other hand, the quantity of bacteria in the air and the presence of epithelial abrasions will determine the severity, rapidity, and extent of the inflammatory destruction.—*Med. Times and Gaz.*, Aug. 23, 1873.

48. *Intermittent Neuralgic Vesicular Keratitis depending upon Traumatic Causes.*—Dr. EDWARD HAUSEN has published in the *Hospitals-Tidende* a paper on this affection, which he says has not been hitherto noticed. It takes its origin in a direct traumatic action on the terminal nerve-fibres, probably those of the corneal epithelium which, doubtless, exercise an important control over

the vitality of the epithelial cell. So pronounced are the neuralgic phenomena attending this affection that it might, perhaps with propriety, be called "neuralgia of the cornea" rather than "keratitis." The origin of the malady is always a wound in the shape of a scraping of the epithelium caused either by a needle or a twig, or some such thing. In from eight to fourteen days suddenly and generally by night, violent pains set in in the eye, shooting outwards in all directions from it, and accompanied by profuse lachrymation and photophobia. Treatment consists in dropping in a solution of atropia, warm fomentations, and, perhaps, quinia and bromide of potassium internally.—Dr. J. W. Moore's *Report on Scandinavian Medicine in Brit. and For. Med. Chir. Rev.*, July, 1873.

[We have seen several cases of this persistent and troublesome affection. In most instances it was brought on by a scratch from the finger-nail of infants, and the subjects of it were nursing mothers. In one case it was produced in a young lady by a wound inflicted accidentally by the finger-nail of a girl. The affection is apt to recur at intervals for a considerable period.]

MIDWIFERY AND GYNÆCOLOGY.

49. *Diagnosis of Early Pregnancy.*—Dr. ADOLPH RASCH, in a paper read before the Obstetrical Section Brit. Med. Association, stated that he wished to draw attention to an important symptom of pregnancy of the first three months, of which until now no notice has been taken by French, English, and German authors. After briefly reviewing the early symptoms as taught in hand books, including the symptom on which Dr. Barnes laid stress before this Association, Dr. Rasch said that no opinion should be expressed in any case unless the uterus had been made out beyond doubt by the bimanual examination. The vaginal examination should always be made by *two* fingers, unless circumstances forbade it, as by so doing results much more accurate could be obtained. An enlargement found, the distinction had to be made between enlargement by hypertrophy, or by tumours, and enlargement by pregnancy. To solve this difficulty, the author has continued his investigation in a very large number of cases of which he kept notes for nearly ten years, and enlarged experience has fully borne out what had helped him in making a few times a right diagnosis where better men had failed. This important symptom was fluctuation. That it must be felt very early seemed to him, *à priori*, certain. For why should half an ounce or more of liquor amnii, inclosed under conditions very favourable for this purpose, not be felt fluctuating equally well as a few drops of pus in a panaritium? The notes of several hundred cases satisfactorily answer this question. Fluctuation could be felt in some cases as early as the seventh week of pregnancy; in most cases after the second month. With every following year the author had less difficulty in detecting this very important symptom. By adding to it the areolar signs of the mammae, we should be able in many cases to make an almost certain diagnosis. The author here mentioned another valuable symptom in early pregnancy which often directed attention to pregnancy, viz., the increased desire to pass urine, especially at night. It certainly ought to put the practitioner on his guard, and make him eschew the use of that valuable instrument for confirming a diagnosis already made—the uterine sound—which, in fact, should never be used by those that could not dispense with it in making a diagnosis. The objection to fluctuation as a symptom of pregnancy might be that it could not be felt, or if felt, might be due to retention of other fluid than liquor amnii. Considering the great rarity of retained menses or other discharges, the mistakes would be rare, even if other symptoms did not help us to make a distinction. But it would certainly be safer practice for a short time to suspect pregnancy, where it did not exist, than to do the reverse. To meet the other objection that fluctuation could not be felt so early, Dr. Rasch urged his hearers to try patiently, and

their assiduity would be rewarded. The best way to feel it was to introduce two fingers into the vagina, while the other hand steadied the womb through the abdominal walls, and alternately to manipulate the uterus with the two fingers. In some part of the uterus the fluctuation would be found often in one corner of the fundus, sometimes lower down. In most cases of early pregnancy, the author found the uterus anteverted, and then the manipulation was easier done than when the womb was retroverted. The fluctuation was in the beginning mostly only felt by the fingers in the vagina, sometimes, too, by the outer hand at the same time. After three months, it would be mostly felt by outward manipulation alone, but we should never trust to that only. The catheter should always be introduced when accurate results were desired.—*Brit. Med. Journ.*, Aug. 30, 1873.

50. *Uterus in Pregnancy.*—The anatomy of the gravid uterus and the foetal envelopes has been recently investigated afresh by Dr. KUNDRAT, of Vienna. The account furnished by the author in his paper (*Medizinische Jahrbücher*, 1873. No. 2) is partly confirmatory of the accepted description of these structures, and partly the opposite: in either case it deserves careful attention. The following points, which are the most generally interesting, refer to the human uterus and embryo:—

The mucous membrane of the newly impregnated uterus is known as the decidua, and is familiarly divided into the decidua vera, reflexa, and serotina. In structure it at first somewhat resembles the uterine mucosa, in or before menstruation; it is thickened, the glands are dilated, elongated, and tortuous, and there is a great increase of intertubular cells. In all respects the structure of the three portions of the decidua is very similar. Inferiorly the vera suddenly ceases at a short distance from the cervix in an overhanging border, and the cervix takes no part in the formation of the foetal cavity. Both the Fallopian tubes and their inferior openings are patent during the whole period of pregnancy. When the impregnated ovum reaches the inferior tubal opening its progress, according to Kundrat, is not obstructed by an adhesive growth of the opposite mucous surfaces to each other, as some observers believe, for no such adhesion exists. For the same reason the ovum does not push before it and invaginate a portion of the mucosa, which becomes the decidua reflexa. The latter is clearly an outgrown and infolded portion of the decidua vera; for it possesses glands on its deep or ovular, as well as on its free, surface. The ovum is retained at the fundus of the uterus by the swollen decidua. If the swelling is not so great, the ovum may travel down towards the cervix; and it is for this reason that placenta prævia is more common in multiparæ. Kundrat does not believe that the ovum enters the mouth of a gland, but that it develops on the irregular surface of the serotina. As pregnancy advances the uterus enlarges, and the connection between it and the ovum becomes more intimate and complex. The enlargement of the uterus is at first out of proportion to the growth of the embryo, and a free cavity exists between the vera and the reflexa which is filled with a somewhat opaque mucoid fluid. It is not till the fourth month that the embryo fills the uterine cavity, and the walls, which were previously disproportionately thick, become disproportionately thin, while the envelopes become transparent. In the fifth month the process has advanced yet another step, by the adhesion—partial at least—of the opposite walls of the uterine cavity; that is, of the decidua vera and the decidua reflexa.

In regard to the connection between the chorion and the decidua, it has often been represented that the processes or villi of the former pass into the glands of the latter. Kundrat maintains that this arrangement was “but seldom” to be discovered. On the contrary, the chorion-villi were found to be fixed in the grooves of the serotina and on the sides of its elevations by a connective mass composed of mucus and degenerated epithelium. Other villi had buried themselves in the tissue of the serotina, and formed a connection so intimate that any attempt at separation ended in rupture. It is here that the placenta is afterwards developed. As gestation proceeds the changes on the decidua are very considerable, and in the last months peculiarly interesting.

The decidua reflexa becomes attenuated by pressure until reduced to a simple layer of the transparent envelopes of the embryo, of which it forms the most external portion. The decidua vera and decidua serotina, on the other hand, remain as comparatively thick layers of tissue, compact on the surface and cellular, but spongy in their deep portion, from the presence of the numerous ends of the dilated glands, which represent sinuses lined by epithelium. As the termination of pregnancy approaches there occurs, as we have said, a remarkable change on the lining membranes of the uterus. These and also the reflexa become whitish, dull, and of a pale yellowish or even yellowish-gray tint, opacity replaces transparency, and the process, which is discovered by the microscope to be one of fatty degeneration, passes into the deeper layers. This description of course reminds us of the simultaneous fatty degeneration of the placenta. When parturition occurs a portion of the membranes is expelled with the fœtus, and it is interesting to inquire what part, if any, of the envelopes is retained. Careful examination certainly reveals that the superficial portion of the decidua vera is as a rule included in the fœtal membranes, while the deeper portion is retained, although this is not always the case. During the first week post-partum the discoloured lining membrane of the uterus may be found microscopically to present the characters of the decidua vera, but the sinuses are full of blood, the superficial cellular layer gone, the fatty degeneration extends to the deepest layers, and the tissue generally is infiltrated with round cells and blood. The lochial discharge consists of such cells and of products of disintegration. In the second week post-partum the process has still further advanced, and the epithelium of the exposed sinuses is found to be proliferating. Restitution now begins and advances, and soon there is found on the surface of the muscular coat a fine layer of connective tissue, covered by epithelium and furnished with young glands, to represent the mucosa of the uterus, which is again at rest.—*Medical Times and Gazette*, August 16, 1873.

51. *Tedious Labour from Debility and its Treatment*.—Dr. HUGH MILLER, of Glasgow, in a paper read before the Obstetrical Section, British Med. Assoc., made some remarks having reference solely to cases in which delay was due to enfeeblement or failure of the natural powers of the organs specially called into action during parturition. The writer held that the element of time should not be considered in the classification of labours, that it was unscientific to do so, and that uncomplicated labours should only be assumed to be unnatural when the pains were no longer active, and the labour non-progressive. After considering the powers of expulsion in a healthy woman, the author referred to the forces at work which prevented a high standard of health from being maintained in city life, and said that, in proportion as it was wanting, labour was prolonged in many cases. Labour in cities was thus frequently tedious from constitutional debility, so that, even while it might be regular and its progress certain for a time, the pains either lingered or became arrested through exhaustion taking place before the labour was completed. When symptoms of acute fatigue set in the pains were short and sharp, and they recurred more frequently. The general indications for treatment were to support the strength before labour set in, and during the first stage, and as soon as the pains indicated debility, to deliver with the forceps. The timely application of the forceps was preferred to ergot, because it seemed more reasonable to assist a weakened organ by giving help from without, than by applying a stimulant to an already overworked one. This practice, instead of inducing flooding, helped to prevent it, through preserving the power of the uterus from becoming exhausted; it also prevented inflammatory diseases of the passages, and the death of the fœtus. In his private practice, he found one case in every twenty-six labours show symptoms of debility; and since he had adopted the early application of the forceps, not one of the children so delivered were stillborn.—*Brit. Med. Journal*, Aug. 30, 1873.

52. *Death from Puerperal Eclampsia; Cæsarean Section; Extraction of Living Child*.—M. MARCÉ, interne, reports (*Le Progrès Médical*, June 14, 1873) an interesting case of this which was treated in L'Hôpital la Pitié, under the

care of Dr. Lorain. The patient was 35 years old, and in her eighth pregnancy. She suffered from puerperal uræmic eclampsia of an epileptiform character. The fatal result being undoubted, the patient was carefully watched, and every preparation made for the operation. The moment after she drew her last breath, the abdomen was opened, and an infant at full term extracted. The child was not cyanosed, but did not respire at first; but after tickling in the mouth and slapping with wet cloths, in a minute it began to respire, and regular respiration was soon established.

53. *The Value of the Corpus Luteum as a Proof of Impregnation.*—Dr. W. M. T. BENHAM records (*Edin. Med. Journ.*, August, 1873) the following highly interesting case. The subject was a female, æt. 29, who it was impossible could have had sexual connection with any one for at least several years before her death, was admitted into the Bristol Lunatic Asylum in December, 1864, suffering from epilepsy. She died on the 26th March, 1873. On examination the organs of generation externally “presented in a marked degree all the highly characteristic signs of virginity. On removing the uterus, ovaries, and Fallopian tubes, they were found to be in a state of intense congestion, the superficial veins standing prominently out, and being filled with dark-coloured blood. The left ovary was more congested than the right, and on its upper anterior surface, situated rather more internally than externally, was seen a bean-like prominence, surrounded by a plexus of bloodvessels all the more apparent from their congested condition; it was of a polished appearance, and of rather a bluish shade of colour. On examining this body it was noticed that its upper surface presented a small nipple-like projection, apparently formed by the distension of a small portion of the peritoneal covering of the ovary, and containing some soft distending material: some small bloodvessels could be observed ramifying round the base of it. At the centre of this prominence was a small irregular dark spot as if a small orifice had existed there, and had been closed up by a clot of blood. On making an incision through its long diameter, there was at once seen an oval-shaped cavity filled by a mass of partially decolourized fibrin, and entirely surrounded—except at the point corresponding to the nipple-like process—with a thick yellow substance of considerable firmness, pierced by a number of small bloodvessels which sprang from the vascular plexus surrounding it externally; and on using a magnifying-glass of low power, these minute vessels could be seen traversing its substance, and losing themselves on its inner edge, which was contiguous to the surface of the partially decolourized fibrinous clot filling up the cavity. On measuring this cavity it was found to be five-eighths of an inch in its long, and three-eighths of an inch in its short, diameter. The yellow substance surrounding it was found to be of the uniform thickness of one-eighth of an inch, the whole structure measuring seven-eighths of an inch in its long, and five-eighths of an inch in its short, diameter. On again examining this yellow substance, it was seen to be of a firm granular-like matter, with many minute oil-globules scattered over its surface; and in parts where the bloodvessels were the most numerous they gave it a pinkish-yellow appearance. It will be at once seen that we have here occurring in the virgin ovary a corpus luteum, possessing such decided characteristics as to make it *per se* quite indistinguishable from the so-called *true* corpus luteum of impregnation of the same period, asserted by many writers—Paterson, Lee, Montgomery, Bernard, Deschamps, Müller, Ramsbotham, and others—never to occur but in the ovary of an impregnated female, and consequently regarded by them as infallible proof of a recent pregnancy.

“Hoping almost against hope that the ovule, which had evidently been only very recently extruded, might still be found in the cavity of the uterus, a section was made through its anterior wall, and on laying it open, there was seen a small circular body, of a reddish-white colour, almost buried in the pulpy purplish-coloured decidual débris, which thickly covered the whole of the interior surface of the uterus. On carefully removing what I could of this decidual matter from its surface, and examining it with an inch lens, it appeared to be more of a pinky-white colour, and having a fine velvety surface, which, under a higher magnifying power, was seen to consist of multitudes of white filaments. It mea-

sured, with the decidual matter surrounding it, and which could not be entirely separated from it, one-twentieth of an inch in diameter, and was situated a little more than seven-twelfths of an inch above the os internum, and slightly to the right side of the median raphé of the uterus. As I have already said, under a higher power its surface was seen to be composed of very short white filaments, which gave it much the appearance, only on a smaller scale, of one of the earliest impregnated ova on record, discovered and described by Velpeau as measuring about five-twelfths of an inch in diameter, and the filaments of which were so far developed as to measure one-twelfth of an inch in length. This ovum he stated to be fourteen days old.

"On making a section through this ovule, with the object of examining it more minutely, I noticed that a very small quantity of albuminous fluid escaped from it, and it lost its globular form directly. A partially collapsed cavity of very minute size was seen to occupy its centre, and although I carefully examined the incised ovule and the fluid which had escaped from it, I could discern nothing more of importance."

This case proves "that an unimpregnated ovule can and has descended into the cavity of the uterus, and remained there for some days without being, as stated by some, immediately washed away with the menstrual fluid, or without, as stated by others, having undergone such rapid dissolution as to have immediately passed away; and, what has been denied by many, that an ovule is ever impregnated in the cavity of the uterus itself, is now made extremely probable. There can, I think, be no doubt that, had this girl had sexual connection, this ovule might certainly have become a fecundated ovum; unless, indeed, what has never yet been demonstrated is the case, that the menstrual fluid, through which the spermatozoa would have to pass to reach the ovule, possesses the power of destroying those bodies immediately on coming into contact with them. Before passing from this subject, let me state that I think this individual case goes a long way to make it probable that where an ovule is extruded it takes place at the commencement of menstruation more frequently than at any other time. This ovule had evidently been extruded for some time—that is, not less than two days; and that it had not been extruded immediately before death is evident from the fact of its having been found in the cavity of the uterus, embedded in the decidual débris. It must, therefore, have taken some time to have been conveyed there, considering the distance it had to travel; and, besides, the condition of the fibrinous clot filling the cavity it left makes it certain that it had been extruded at least two days previously. It appears, then, that in this case the ovum was extruded at the commencement of menstruation, and that it is usually so in other cases seems, I think, to be indicated by this, that at the time of, and for a day or two previously to, menstruation, a much greater supply of blood flows to the ovaries than at any other period; and the fact of the distended Graafian vesicle sharing in the increased vascularity of the whole structure at that particular time, makes it extremely probable that the extra pressure then put upon the captive ovule should be sufficient to cause it to burst its coverings and to become extruded, and should it not be sufficiently developed to do so at that period, in all probability it would not become extruded until the ovary should be again the subject of increased vascularity; and this seems to show the reason why a menstrual period often passes without the extrusion of an ovule at that particular time. It would appear, then, that the increased vascularity which takes place at the menstrual period goes a long way to explain the mechanism by which an ovule is extruded more frequently at that than at any other time; also there can be no doubt that the increased vascularity is of great importance in producing those changes in the Fallopian tubes and their fimbriated extremities, which result in those parts of the sexual apparatus taking on the turgid and erectile character necessary for the due performance of the function of grasping the extruded ovule and of conveying it to the cavity of the uterus. But where, in cases by no means uncommon, an ovule is extruded and becomes impregnated at an *inter-menstrual* period, I am bound to believe, from instances which have come under my own observation, that it is owing to the fact that, from some exciting cause more or less potent, the ovaries have taken on an increased vascularity of action resembling that incident

to menstruation, and sufficient to extrude a well-developed ovum at an abnormal time."

Bischoff, Casper, and Kirkes believed that the so-called true corpora lutea may be produced independently of impregnation, and that they consequently cannot be received as proofs of pregnancy. That they are right in this conclusion this case materially helps to prove. The fact of a corpus luteum of menstruation having been found to so exactly imitate those of impregnation, if, indeed, this was only a *solitary* instance, must considerably weaken the theory still held by many, that a so-called true corpus luteum is a sure sign of impregnation. When we come to consider why impregnation should make such a vast difference in the appearance and structure of the corpus luteum resulting therefrom—as is said to be the case—it is by no means easy to see the reason why such should be so.

Dr. Benham believes "that the presence of a so-called true corpus luteum, of at all recent formation, in the ovary of a female, has not the slightest legal value whatever in determining the question as to whether impregnation has taken place or not. If that is proved, as I believe it is, by the facts I have brought forward, it should be of considerable importance in its medico-legal as well as in its anatomical and physiological bearings, for in one case at least recorded by Dr. Guy, the existence of a corpus luteum was held to *prove* that conception had taken place, when the uterus itself presented not the slightest signs of such having been the case."

54. *Duration of Menstruation.*—Dr. COHNSTEIN gives the results obtained from careful inquiry of four hundred women, in whom the menopause had occurred several years previously. 1. The average duration of menstruation was thirty-one years. 2. The menopause occurred gradually in 76 per cent., suddenly in 24 per cent. 3. It occurred in those who had menstruated early (under 13 years) about three years later than in those in whom the catamenia appeared late (after the 17th year of age). 4. The regularity or irregularity of menstruation appears to have no influence on its duration. 5. More married women than unmarried obtain a menstruation period of 29–34 years. 6. Pluriparæ show the highest percentage of duration of menstruation for 29–32 years. If their last confinement take place between the ages of 38 and 42, the duration of activity of the uterus varies between twenty-four and thirty-three years; if it occur between the ages of 30 and 38, the duration of menstruation varies between twenty-five and twenty-eight years. Abortion hastens the appearance of the menopause. 7. Lactation increases the duration of menstruation. To sum up, the catamenial function is of longest duration in women who menstruate early, are married, have more than three children, nurse their children themselves, and cease child-bearing between the ages of 38 and 42.—*Brit. Med. Journ.*, May 31, 1873, from *Deutsche Klinik*, No. 3, 1873.

55. *Dysmenorrhœa.*—Dr. GEO. H. KIDD, in his address to the Obstetric Section of the British Medical Association at its late meeting, calls attention to the occurrence of two forms of dysmenorrhœa, one arising from obstruction, the other caused by subacute ovaritis.

"That dysmenorrhœa, dependent on an obstruction to the exit of the menstrual fluid from the uterus," he remarks, "is of frequent occurrence, no physician of practical experience can doubt. Moreover, that, when it does occur, it can only be relieved by treatment directed to the uterus, and of such a nature as will remove the impediment, is a matter of every-day experience, and cannot be questioned; but, when we find it asserted that, without obstruction, there cannot be dysmenorrhœa, or that obstruction is the essential cause of the disease, and that it can only be cured by removing this obstruction, then we are bound to inquire whether clinical experience will confirm the statement, or prove that it is one founded on a too limited sphere of observation. I shall ask you, then, to allow me to trace, in rapid outlines, the clinical history of dysmenorrhœa, and to inquire into the varying nature of the symptoms we meet with. In the first place, I shall speak of cases in which the pain is, beyond a

doubt, due to some cause preventing the escape of the menstrual fluid from the uterus.

"The typical and most simple form of this class of cases is when the obstruction is produced by a small os uteri and narrow cervix. In a typical case of this kind, the condition of the os is a malformation, and is congenital; but it may also be an acquired condition, and is then the result of the contraction either of a cicatrix or of effused lymph. The impediment may, however, and often does, depend on other causes, such as a flexion, and then the symptoms may manifest themselves from the beginning of menstrual life, or not till a later period. A polypus, especially if so situated as to cause a valve-like obstruction, as in one of Marion Sims's cases, or the growth of a fibrous tumour, or some forms of inflammation, may also give rise to obstruction and dysmenorrhœa as an acquired disease.

"The pain in dysmenorrhœa, depending on obstruction, commences either when the discharge is beginning to flow, or some time afterwards. Patients frequently say it begins some hours before the discharge; but, if an examination be made with the speculum when the pain begins, it will be found that the discharge is actually exuding from the uterus, though not in sufficient quantity to make its way out of the vulva and attract the patient's attention. When the obstruction is not very great, and the discharge scanty, the pain may not occur for some hours, until, in fact, the discharge becomes so copious that it cannot escape through the narrow os.

"The pain is paroxysmal in its character, and seems to depend on the efforts of the uterus to expel its contents. As soon as these efforts have so far overcome the obstruction as to allow the free escape of the discharge, the pain ceases. During the interval of menstruation, there is freedom from pain, and the general health may be unimpaired, but the same cause that hinders the exit of fluid from the uterus prevents, in general, the entrance of semen into it, and the result is sterility.

"On examination, the impediment, its position, and true nature, can be ascertained, and, in the majority of cases, it can be removed by means adapted to the circumstances of the case.

"I have thus sketched the history of dysmenorrhœa caused by obstruction to the exit of the menstrual fluid, chiefly from the facts recorded in my own case-books. From the same source, I have now to describe another form of the disease, one in which the symptoms are so different, that it is impossible they can depend on the same condition. In these cases the disease, instead of being usually congenital, is always acquired. It may be in early girlhood, or it may be after having given birth to several children. In one case, the patient had been married eighteen years and had no family. 'While at school, through neglect,' she said, 'uterine disorder commenced, and has continued without intermission ever since.' In another case, the patient had been married six years; she had had two children, the youngest nearly four years old. She had not nursed either. She had never recovered thoroughly after the birth of her last child, but it was only within the last year menstruation became painful. In another, the disease set in after the birth of the third child. The patient became pregnant a fourth time, and nursed this child three months; but she was in bad health all the time of her pregnancy and while nursing. When menstruation returned, after weaning the child, it was as painful as ever. In many cases, the disease supervenes on the mechanical dysmenorrhœa, but the symptoms are so different, that the patient can herself tell when this took place.

"In the former group of cases, the pain commences simultaneously with the discharge or after it has appeared. In this the pain begins a week or ten days, or more, before menstruation, and at the same time that the pains occur in the pelvic region the breasts become painful, hot, swelled, and tender to the touch. The pelvic pains are spoken of as dull, achy pains; they are felt in the pelvic region, and extend down the thigh to the back. They are not the acute paroxysms of pain of the former cases; they are aggravated when menstruation actually begins, and often continue throughout the whole period, but more frequently are relieved as soon as the discharge is established. They then

cease, and return on, it may be, the fourteenth day; that is, at the middle of the interval. This 'intermediate pain,' as Dr. Priestley calls it, may last only a few days, or it may continue and increase in severity till the next menstruation, the only interval of ease being for the first ten or twelve days after menstruation.

"Menstruation in these cases is often irregular, generally retarded, sometimes it comes too soon, and in some cases a whole month may be passed over, but the pain occurs when the menstruation is due, even though the discharge does not appear.

"The discharge is generally scanty, but sometimes it is excessive. Its appearance is almost always preceded or followed by severe headache, often by vomiting, and, during its flow, palpitation is often complained of, also frequent micturition, and sometimes tenesmus and kneading in the rectum.

"Miss H. states that menstruation has always been painful during the first two or three hours, but for the last two or three years she has suffered very much from pain for a week before menstruation begins, and at the same time her breasts have also become very painful. She has had much palpitation lately, and severe headaches before menstruation begins.

"Mrs. W., married seven years, no children, states that menstruation was always painful at the beginning, but, since marriage, she has suffered for a week before it begins from pain round the sides, stomach, and back, and from pain in her breasts, which become swollen. About five years ago, the os uteri was slit, after which she became pregnant, but aborted at the end of the third month. The painful menstruation continues, notwithstanding the operation and pregnancy. These were cases in which the form of dysmenorrhœa, of which I now speak, supervened on that due to obstruction; on examination, in this latter case, the uterus was found normal in position and size. The os and cervix were quite healthy, but the os was very open in consequence of the operation that had been performed on it. The right ovary, however, was found to be swollen, and very tender to the touch.

"In many cases, in addition to the symptoms already described, there is a constant dull, aching, sickening pain in the back; and there is so much pain, *in coitu*, that all attempts at intercourse have to be given up. Mrs. C. has been married ten years, and has no family. For many years she has had painful menstruation, the pain beginning more than a week beforehand. The os uteri was twice slit, without in any way relieving the pain of menstruation. She has also had the orifice of the vagina dilated, for the pain *in coitu*, but without benefit. On examination, the vagina admitted a full-sized speculum with ease; there was no contraction or spasm at the orifice. The uterus was found with the cervix slit, but otherwise healthy, and the right ovary was found lying in Douglas's space, somewhat enlarged and tender to the touch, the pain, on pressure on it, being of the same character as that caused by intercourse.

"This prolapse of the ovary into Douglas's space was described by the late Dr. Rigby. It is a frequent accompaniment of the form of dysmenorrhœa, now spoken of, and is productive of great pain *in coitu*. If it should be the left ovary that is prolapsed, there is also pain in defecation, and this pain and the pain in intercourse can generally be relieved by the use of the lever pessary of the late Professor Hodge.

"It has been mentioned that, when the menstruation has missed, the pains occur at the time, notwithstanding the non-appearance of the discharge; and it may be further mentioned, that in some cases it continues for a year or more after menstruation has finally ceased.

"When we make an examination in these cases, we may find the os uteri small and contracted; or the uterus bent on itself, or presenting evidences of endometritis; but that these are only complications, is made evident by the fact that in a large proportion of cases we find the uterus normal in position and size, and its tissues perfectly healthy. If we place the patient on her back, with her head and shoulders raised, and her legs well drawn up, and, having introduced the right forefinger into the vagina, make pressure with the left

hand over the hypogastrium, we shall find the ovaries, which in the healthy state can seldom be recognized, one or both of them enlarged and very sensitive to pressure. If one of them should lie in Douglas's space, the true nature of the case will be recognized still more easily, and there will be no hesitation in referring the symptoms to their true pathological cause—subacute inflammation of the ovaries.

“To understand clearly the sequence of the symptoms and their true nature, it is only necessary to bear in mind the function of the ovaries, and their sympathetic relations with other organs, especially the breasts; to remember that the ovaries preside over and initiate the process of menstruation; that, in preparing for this, the Graafian vesicles, originally deeply seated in the substance of the organ, gradually enlarge and approach the surface till they become prominent, and then, rupturing its coats, discharge their contents into the Fallopian tubes, thus constituting the essential part of menstruation. It is not necessary to dwell on the physiology of menstruation on such an occasion as the present; but, if we consider for a moment, as was suggested by Dr. Meigs, the pain and various reflex irritations that so frequently attend the performance of another physiological process—dentition—we will have less difficulty in understanding that pain and various reflex irritations may attend the growth of the Graafian vesicle, its approach to the surface, and its bursting through the coats of the ovary, if this organ be in an unhealthy state.

“In dysmenorrhœa arising from obstruction, we may speak with much confidence on effecting a cure by dividing or dilating the os uteri, or by other appropriate means. In dysmenorrhœa caused by subacute ovaritis, surgical or other treatment directed to the uterus is of no avail, and, indeed, we must be very cautious in promising permanent relief. Leeching, especially at the anus, hot baths, hot syringing, sedatives to the rectum, counter-irritation over the ovaries, the internal use of the bromides, and, above all, rest, and especially physiological rest, will procure relief, and in my hands have often done so after surgical operations have utterly failed.”—*British Medical Journal*, August 16, 1873.

56. *Uterine Polypi*.—Dr. T. MORE MADDEN read a paper on this subject, before the Obstetrical Society of Dublin (June 28, 1873), an abstract of which, with the interesting discussion to which it led, we shall place before our readers.

Dr. M. remarked that the subject afforded a striking illustration of the progress of modern obstetric surgery; their diagnosis being now made with certainty, and their removal, with every prospect of success, being now possible by a comparatively rapid, painless, and bloodless operation. The cases of uterine polypi which Dr. Madden had observed were, he stated, divisible into three classes, viz., mucous, fibroid, and cystic polypi. The first, developed from the lining membrane of the uterus, and easily destroyed by torsion or pressure; the second, formed within the pseudo-muscular substance of the uterus, and either sub-mucous, or sub-peritoneal in their origin. The distinction made between intra-uterine tumours and intra-uterine polypi, Dr. More Madden considered unnecessary and untenable. The structure of a so-called fibroid tumour of the uterus is identical with that of a fibroid polypus: either may be encapsuled, and the symptoms of one cannot be distinguished from that of the other. A fibroid polypus is generally but a more advanced stage of a sub-mucous tumour, which, as it grows downwards into the uterine cavity, loses its sessile character, and becomes pyriform and constricted, or pedunculated, by its own weight, at its point of projection from the uterine wall. As to the age at which uterine polypi are most frequent, Dr. More Madden gave a table of fourteen cases, by which it appeared that the larger number of cases were observed about the period of the approach of the “change of life.” The symptoms in these cases were menorrhagia or metrorrhagia, profuse or offensive leucorrhœal discharge, and uterine pain, varying, in different cases, from the slightest possible degree of local soreness to the most intense uterine colic. These symptoms, although also applicable to other uterine diseases, were, how-

ever, of importance as indicating the necessity for a local examination, by which alone the true nature of the case can be recognized. The treatment of uterine polypi may be divided into the surgical or curative, and the medical or palliative. The former, when applied to intra-uterine polypi, is of comparatively very recent origin. The credit of proposing the dilatation of the os and cervix uteri by sponge tents, for this purpose, is given to the distinguished obstetric surgeon, Sir James Simpson. But Dr. More Madden read an extract from an ancient volume, entitled, "*The Method of Physick*," by Philip Barrough, the 8th edition of which was published in 1639, which showed that the very same mode of effecting the dilatation of the os and cervix uteri was described and practised at least 234 years ago. In the great majority of cases there can be no question that these growths should, if possible, be removed by operation. But it is as unquestionable that in some cases operative interference is not available; in others, the symptoms are hardly sufficiently urgent to demand this; and again, in other cases we cannot induce the patient to submit to an operation. Under such circumstances Dr. More Madden stated that he was convinced that the progress of the disease may sometimes be checked, its symptoms alleviated, and the patient restored to comparative health and comfort, by purely medical treatment. Moreover, in every case of polypoid disease of the uterus, the surgical measures required should be conjoined with appropriate constitutional treatment. The remedies from which Dr. More Madden has seen most benefit in these cases were, the bromides and iodides of ammonia and potash, given in very small doses, and steadily persevered in for a considerable time; or of a weak solution of iodine. These medicines should be conjoined with the topical application of iodine to the tumour; either by Dr. Savage's plan of injecting a small quantity of the tincture into the uterine cavity; or by Dr. More Madden's own method, of dilating the cervical canal, and swabbing out the uterus with a strong solution of iodine dissolved in glycerine. This application must, however, be always made with caution, as, if great care be not taken, it may, as in some cases cited, produce very alarming consequences. Dr. More Madden referred at some length to the curative influence in this disease of some of the iodated and bromated Swiss and German mineral waters, which he had brought under the notice of the Society some months before, in a paper "*On the Constitutional Character and Treatment of the Diseases of Women connected with Chronic Inflammation of the Uterus*," and also in his work on "*The Spas of Germany, Switzerland, France, and Italy*." As some recent writers had very freely borrowed his opinions—the fruit of long personal experience and observation at various spas of the Continent, to which he had been one of the first to call attention in the treatment of uterine complaints—he again reiterated his conviction of the value of some of these waters, and especially of the iodated and bromated springs of Kreuznach and Wildeg, in the treatment of the disease now under consideration, and referred to cases illustrating this observation. In the treatment of the uterine congestion associated with polypus of the womb, tepid or cool injections, *per vaginam*, are generally most serviceable. The ordinary syringes used for this purpose, as well as that of Dr. Graily Hewitt's, were inconvenient and fatiguing to the patient. Dr. More Madden exhibited an improved syringe which he had had constructed on the principle of the siphon, and had found very useful. The paper concluded with the detail of several cases of polypus of the uterus, specimens of which, removed by Dr. Madden, were exhibited.

Dr. LOMBE ATTHILL considered that the question of the treatment of fibrous tumours of the uterus by medical means, ought never to be entertained if it were possible to remove them by a surgical operation. He believed that it was a more dangerous procedure to frequently dilate the cervix—for the purpose of facilitating the injection of fluids or application of caustics or iodine—than to remove a tumour by operation. Personally, he believed patients were more likely to die from the effects of prolonged manipulation. Two of his patients from whom he had failed to remove tumours, and who had consequently been subjected to rather protracted operative measures, had died; while in other cases in which he had successfully removed the growth, no unfavourable results ensued. If, therefore, medicinal applications are to be made to the uterus, they

should not be done by repeated dilatations of the os and cervix, but through a tube such as that he had just exhibited. He thought that prolonged irrigation of the uterus and vagina with cold fluids, by means of a douche, such as that shown by Dr. Madden, objectionable, having seen a case which very nearly proved fatal, from an acute attack of pelvic cellulitis, ending in the formation of an abscess, in a lady who had used injections of cold water into the vagina for the purpose of checking profuse menstruation. He, therefore, recommended that fluids so employed should be of the same temperature as that of the body.

Dr. KIDD said he had never seen much benefit from the medicinal treatment of fibroid tumours of the uterus. When these tumours set up an inflammatory action, and the surrounding tissues become infiltrated with the products of inflammation, properly directed treatment will cause absorption of these, and so the tumour will appear to be lessened. But he had never seen any case in which the tumour itself had been actually diminished in size. This, he believed, was as true of the waters of Kreuznach as of other forms of treatment. These waters have a very high reputation, and patients suffering from fibrous tumours are constantly sent to Kreuznach. He visited Kreuznach last year, and had a long conversation with Dr. Præger, one of the leading physicians there, and found he held the same opinion as to the benefit to be derived from the use of the waters as he himself did, and which he had already mentioned. Of the various drugs that have been recommended, Dr. Kidd thought the chloride of calcium makes the patients more comfortable than any other, especially when it acts a little on the bowels. Chloride of calcium was first recommended by the late Dr. Rigby, and it is spoken of very favourably by Dr. M'Clintock; but, though it alleviates the sufferings of the patient, he, Dr. Kidd, had never seen any case in which it caused absorption of the tumour. These tumours often become less in size, and sometimes almost quite disappear when menstruation ceases; but this cannot always be waited for, and then surgical treatment, that is the actual removal of the tumour, is the only treatment to be relied on. Unfortunately it is not always possible to accomplish this; if not, the application of nitric acid will often check hemorrhage. Dr. Kidd referred to the position of the tumour in one of Dr. Madden's preparations, and also in Dr. Cranny's. In each, the tumour grew from the posterior wall of the uterus and bulged out the anterior wall. At previous meetings of the Society, he, Dr. Kidd, had alluded to this bulging out of the wall of the uterus opposite to the seat of the tumour. If this be a law, it will prove a matter of great practical value, and enable us to make the diagnosis between a pedunculated intra-uterine, and an interstitial tumour by the sound alone, before proceeding to dilatation. If there be a tumour growing, say from the posterior wall of the uterus, it will cause a bulging forwards of the anterior wall, and the sound can be passed along the side that is bulged out; whereas, if the tumour be an interstitial one, the sound will pass, not along the bulged out wall, but along the opposite one.

Dr. CHURCHILL had never seen medicines nor applications of iodine do any good in the treatment of polypi. He had, however, seen large fibroids enucleate themselves. He thought that the points stated by Dr. Kidd were of extreme value, and likely to prove of great importance. Dr. Churchill then alluded to the curious circumstance (which, he stated, he was unable to explain) that the introduction of even a single tangle tent through the os internum sometimes produced very severe effects. He narrated a case in point, which nearly proved fatal, peri-uterine inflammation having been set up, with the formation of an abscess between the rectum and vagina. He was constantly in the habit of introducing a tent through the os externum and keeping it in the canal, by means of a plug, for twenty-four hours, without the slightest inconvenience or risk; but when once passed beyond the inner os, a region of danger was entered upon.

Dr. MORE MADDEN, in reply, said that he had never meant to put drug treatment in opposition to the surgical treatment of uterine polypi, except in those cases in which an operation is not permitted, or is inapplicable; and in these remedial treatment is oftentimes most serviceable.—*Irish Hospital Gazette*, July 15, 1873.

57. *Chronic Inversion of the Uterus; Reduction effected by Manipulation.*

—Two cases of this were reported to the Dublin Obstetrical Society, June 14, 1873.

The first was reported by Dr. GEO. H. KIDD. The subject of it was a lady who had been confined in August, 1872. When she came under Dr. K.'s care he found a tumour in the vagina which, on careful examination, he found to be an inversion of the uterus. It was almost complete, that is to say, the neck of the tumour was surrounded by a portion of the lip of the uterus, but not more than one-fourth of an inch in depth. A section of the tumour would present an appearance like the diagram which he now exhibited. He had some doubt as to whether he should call it a complete or an incomplete inversion; but it was as complete as any case he had seen; there was nothing but a small lip that had not been turned in. The woman was extremely pale and anæmic, and had a countenance expressive of very great suffering. She came into the Coombe Hospital, and after allowing her to remain in bed a few days he tried to reduce the tumour. He put her under the influence of chloroform, and placing her on her back on the table, he introduced his hand completely into the vagina. He grasped the tumour in his hand, and compressed it for a few seconds, so as to empty it completely of blood. He then lengthened his fingers, and grasping the tumour between them and his thumb, and compressing it as much as he could, he gradually pushed it up into its place.

The second case was reported by Dr. G. JOHNSTON, Master of the Rotunda Hospital. The subject of it was æt. 35, married, mother of five children, admitted into Rotunda Hospital 25th of July, 1871, suffering from hemorrhage caused by inversion of the uterus, which took place at her last confinement [Jan. 1, 1871], and as she states, must have occurred at the time of the expulsion of the placenta, as the person in attendance hurt her very much in forcing it off, immediately after which she had great flooding, so much so as to render her quite unconscious. However, she suckled her child for a period of six months, the hemorrhage continuing more or less ever since her confinement, but has diminished since she weaned the baby.

On examination the uterus appeared protruding through the vulva, and on passing the fingers within the vagina about half an inch of the cervix was found uninverted, and could be felt distinctly encircling the tumour, which was five inches in length, with a diameter of nearly three inches.

On the 2d of August, seven months after the accident had taken place, the patient was put under the influence of chloroform, and having been put on her left side in the usual obstetric position, Drs. Denham, M'Clintock, and Athill assisting, the fingers of the right hand were introduced within the vagina, the inverted mass was grasped firmly at the cervix, and by degrees, and after some difficulty, reduced within the os, and, eventually, the uterus was completely restored to its normal position. There was no hemorrhage during or after the operation, which lasted about twenty minutes, and as soon as she recovered from the anæsthesia she was given a full opiate.

On the 6th she was examined with the sound, when we ascertained it passed into the cavity about $4\frac{1}{2}$ inches. There has been no hemorrhage since; in fact she convalesced favourably and went home quite well on the 27th.

I have heard within the last three weeks that she continues in excellent health, menstruates regularly every month, and in the normal quantity.—*Dublin Journ. Med. Sci.*, July, 1873.

58. *Amenorrhœa from Congenital Malformation.*—Dr. CHURCHILL read a paper on this subject before the Dublin Obstetrical Society, May 10, 1873. To make an accurate diagnosis was often difficult, and yet the question of relief depended upon this point. The means of forming diagnosis were either physiological, or physical. The first dealt with the presence of the menstrual *molimen* and of sexual gratification, etc. By means of the second, we judged of the presence or absence of the different organs of generation. A most useful method of examination was that termed the *bimanual manipulation*. Dr. Churchill related twelve cases in illustration of his subject, in some of which, the ovaries were either not present, or were in an infantile

state, undeveloped, and not acting; while in others, the fault consisted in the absence of the uterus, or in congenital closure of the os uteri (one case). As regards treatment, of course in most cases, nothing could be done; but, to remedy an undeveloped state of the uterus, Sir J. Y. Simpson had recommended the use of a galvanic pessary. A practical question was, whether we think that a patient ought to marry, in whom these defects were discovered. However reluctant we should be to condemn her to a single life, it should not be forgotten that another person is concerned in the matter, and therefore the decision against marriage is called for, or, if she be fully bent upon marrying, the other party ought to be fully informed as to the existing defect.—*Brit. Med. Journ.*, August 9, 1873.

59. *Unilateral Development*.—Dr. RINGLAND communicated to the Dublin Obstetrical Society a remarkable case of this in a young lady æt. 20, who had never menstruated naturally, but in whom vicarious discharges at each monthly period had occurred for more than four years, through the bladder, rectum, nose, or eyes. The left side of her body was perfectly developed sexually; while the right was not so. The left breast was normal, the right resembled that of a girl of 12; there was hair on the left side of the pubes, none on the right; the left labium was fully formed, the right was almost wanting. The clitoris, vagina, and uterus were absent. The left ovary could be felt, but the right could not be detected. Sexual desire existed in this case, but a strong opinion as to the inadvisability of marriage was given.—*Ibid*.

60. *Form of the Body in New-born Children*.—FRANKUCH calls in question the statement of Simpson, that male children are more exposed to danger than females during birth, on account of their greater size. He finds that, of children of equal weight, more males die than females; and, with the view of ascertaining whether this was to be accounted for by the size of the head, he has examined the relation between the head and the rest of the body in 714 new-born children. He finds that, towards the end of pregnancy, the increase in weight of the child is relatively more rapid than that of its length or of the size of its head, the body and limbs becoming more developed. For equal weights, boys are longer, and have larger heads than girls. First children are longer and have larger heads than those which follow them.—*Brit. Med. Journ.*, May 31, from *Archiv für Gynæcologie*, vol. iv., part 2.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

61. *Experiments with Snake Poison; Potassa as an Antidote*.—In a letter from Madras in the *Med. Times and Gaz.*, Aug. 23, 1873, the writer relates some experiments he witnessed made by Dr. John Shortt with snake poisons. He states, "We next witnessed a set of experiments to show the effects of liquor potassæ on the snake poison and on the animals poisoned with it. For this purpose a solution was made of four grains of dried cobra poison in half an ounce of distilled water. The dried poison had not lost an atom of its virulence (as we afterwards saw) although it was taken in August, 1870. The solution was slightly opalescent. On adding liquor potassæ to a still further diluted quantity, some striking chemical change evidently took place, for it speedily became of a bluish-black colour—at first slight; afterwards intense, like newly prepared ink.

"Having satisfied us of the reaction between the potassa and the poison, experiments were made on animals. Two dogs injected with the solution of cobra poison into the cellular tissue of the parietes of the chest died in one hour and thirty-five minutes and in two hours and forty-seven minutes respectively; whilst one dog that was injected first with cobra poison, and with diluted liquor potassæ afterwards, survived for four hours and fifty-seven minutes; and a

rabbit that was injected with the dark mixture of cobra poison and liquor potassæ was quite unaffected by the operation. . . . The reader will see at once that in the effects of the liquor potassæ Dr. Shortt seems to point if not to an antidote yet to something like one."

A case is related from the *Madras Monthly Journ. Med. Sciences*, in which the potash treatment proved successful. This is the third successful case under this treatment. Dr. S. states: "Long before I had the opportunity of testing the action of the liquor potassæ on the human subject, I ascertained the property it possessed of neutralizing snake poison, and the difficulty I experienced was to introduce some means to expedite its action in the living blood. After repeated trials and experiments, I found that brandy as a diffusible stimulant roused the nervous system, excited the circulation, and thus carried the potash into it as rapidly as possible, and enabled it to overtake and neutralize the poison in the blood. The secret of success, then, consists in bringing the patient's system rapidly under the influence of the brandy—or in other words to make the patient *drunk* as speedily as possible, and maintain this effect for some time after. During the first forty-five hours of the patient's stay in hospital he took seventy-two ounces of brandy and four ounces and a half of the liquor potassæ by the mouth, fourteen ounces of brandy and three ounces and a half of the liquor potassæ by means of enemata through the rectum, and four ounces of the liquor potassæ was used in the bath he had. In all eighty-six ounces of brandy, and eleven ounces of the liquor potassæ were used in this case!"

62. *Treatment of Snake-bite by Artificial Respiration.*—Mr. VINCENT RICHARDS records (*Indian Medical Gazette*, May 1, 1873), a series of eight experiments instituted on dogs, to test the value of artificial respiration, as suggested by Dr. Fayer, in cases of snake-poisoning, and he thinks the results, though not absolutely successful, are very encouraging. In one case the heart's action was maintained for 10 hours, and then ceased only on the discontinuance of the artificial respiration; and in another, the heart was kept beating for 24 hours and 35 minutes, sensibility being restored after it had been completely lost.

The following is his explanation of the physiological action of snake-poison. When snake-poison is injected into the areolar tissue, as is usual in the case of a bite, absorption gradually takes place. When the poison reaches the lungs, it appears to excite the pneumogastric nerve, and through the medulla and spine the phrenic and intercostal nerves, principally leading at first to an accelerated action of the respiratory muscles, and afterwards, as a larger quantity of poison becomes circulated through the lungs, and the stimulus to the nerve-centres is augmented, to paralysis of them. Vomiting, which is a frequent, though not constant, symptom, probably arises from this irritation of the pneumogastric nerves. The medulla oblongata and spine are, indeed, primarily affected, and it is only as a secondary effect that the cerebral ganglia and cerebrum are involved. Presuming this to be the physiological action of the poison, it follows that a person fatally bitten dies from asphyxia produced by paralysis of the motor and respiratory nerves. The indication of cure, provided the effect of the poison on the nerve-centres is not permanent, is therefore artificial respiration. Moreover, if elimination of the absorbed poison can go on, as appears to be the case, we have good reason to hope for favourable results. When, however, the amount of poison injected is overwhelming, little, I think, can be hoped for from the treatment. That an animal may be affected even to convulsions, and yet ultimately recover without treatment, I have already shown (Fayer's *Thanatophida* of India, p. 127), and I certainly think that when the quantity of poison injected into the areolar tissue would, under ordinary circumstances, be just sufficient to kill, artificial respiration, if properly maintained, might save life, as it does in the case of curara poisoning.

I believe it was this latter fact which first led Dr. Fayer to make a trial of artificial respiration in snake-poisoning, and the subsequent encouraging results which he obtained induced him to suggest its adoption in such cases.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Sub-spinous Dislocation of Shoulder, and Reduction by Manipulation.
By H. C. MARKHAM, M.D., of Winthrop, Iowa.

Jan. 25th, 1873, I was called to visit L. N. B., a large and muscular man, who was suffering much pain in his right shoulder, and gave evidence of having received severe injury of the part. He stated that while riding in his cutter his horse became unmanageable, and he was thrown out, alighting upon his left side. He still with his right hand retained his hold upon the reins, and while in this position, by a spring of his horse, his arm was jerked violently upward. Half an hour afterwards I reached him, and found the arm dropped to the side and entire immobility present. The contour of the shoulder was decidedly unique; its superior aspect presented a broad flat surface, slightly sloping towards the back. A dinner plate could have easily rested upon this "plateau." Chloroform was administered and reduction by extension attempted; but in spite of the most protracted and varied endeavours the luxation persisted. At length I decided to adopt the plan so successful in hip-joint dislocation, viz, that by manipulation. Grasping the humerus with my right hand, and with the left steadying the scapula, the arm was brought up nearly to the side of the head; I then carried it obliquely backwards and downwards, nearly describing the movement that caused the accident (except in reverse order). As the arm reached a position which pointed to the opposite hip a distinctly audible snap was heard, which with the sudden restoration of the natural rotundity of the shoulder gave evidence that reduction was accomplished. The subsequent tenderness was extreme and protracted, showing that much laceration attended the injury.

All surgical authors agree that this form of dislocation is very rare, and it is claimed by some that it is never entire. But cases reported previous to this one prove that the latter actually occurs, and no joint was ever more completely dislocated than the case just reported, as the head of the humerus was felt against the spine of the scapula, and somewhat higher than is usually described. The mode of reduction, which alone seemed capable in this case of being made successful, was that by manipulation. In elevating the humerus the spine of the scapula served as a fulcrum, at the same time the opposing contraction of the supra-spinatus muscle was overcome, and the great pectoral muscles thus given opportunity to move the head into its normal position. Whether this be the correct theory or not, I am positive that it is the right procedure in these cases, and that all other methods are by far more difficult.

Case of Encephalocele. By W. SCOTT HILL, M.D., of Augusta, Me.

In June, 1871, I attended a lady 30 years of age in labour with her third child. The labour lasted about three hours and a half, pains not notably severe. Child a well-developed boy weighing $8\frac{1}{2}$ pounds. Nothing

unusual was noticed about the infant at its birth. A few days after a small nævus was observed on the skin over the anterior fontanelle. The second week a small conical tumour appeared directly under the nævus, about the size of a large pea, soft to the touch, and pressure appeared to cause some distress, especially if hard enough to make it disappear, which it would, but again appear on the pressure being removed. The child was occasionally seen during the next four weeks, nothing being done in the mean time, as I had hopes it might not increase very much. The child was not allowed to cry or fret, and its health otherwise was good. During the fourth week after the appearance of the tumour it rapidly increased in size. It was conical, circular at its base, about three-quarters of an inch in diameter, and about the same in height. A pulsation synchronous with the heart was plainly felt, and was also perceptible. Coughing or crying increased its size. Pressure sufficient to force it completely within the cranium seemed to have a benumbing effect similar to mild concussion. Knowing the usually fatal result of cerebral hernia, and believing the only chance for recovery was in arresting the increase of the tumour and waiting for the bony closure of the fontanelle, the following treatment was adopted as best calculated to meet the indications: A circular compress of tea lead with a diameter full twice that of the base of the tumour was sewed between two layers of chamoi-leather. This was placed in the centre of a strip of resin plaster (emplast. resinæ) some six inches long. Gentle but firm pressure was made on the tumour, the size being diminished about one-half; not deeming it safe to use greater continued force than that, the scalp, pushed up on each side towards the hernia, in order to bring constant pressure on the tumour, and the plaster fastened at the ends first. It evidently gave some pain and uneasiness at first, but it soon passed off, and the infant appeared to notice it but little. This treatment was continued until the end, excepting after a couple of months a small pad was placed between the lead compress and the adhesive plaster when greater pressure was made. There was no increase in size of the encephalocele after the dressings were first applied. They were not taken off except to change the adhesive plasters as often as it was found necessary. During the summer the little patient had a troublesome diarrhœa, probably due in part to artificial feeding. The plasters caused no irritation of the skin further than some itching. The child was very pale, but grew finely, and was as large and fat, notwithstanding his diarrhœa, as more fortunate infants. On his first birthday by chance I visited him, and found the fontanelle had closed, the cranium being firm when all the dressings were removed. There was some thickening of the extra-cranial tissues, but no pulsation or any of the former symptoms of encephalocele. The nævus of course remained. During the next three or four months he was again occasionally subject to attacks of diarrhœa. In autumn he was carried on a visit to another State, where he was well, and has been since that time. He is very intelligent and active for a child 22 months old, seeming to suffer nothing from the usually fatal disease.

There was also umbilical hernia, which was cured in a couple of months or more by a pad secured in place by a strip of adhesive plaster.

Case of Spontaneous Reduction of an Inverted Uterus Eight Weeks Post-Partum.—By H. HUNT, M D., of Belloit, Wisconsin.

I am induced to report the following case on account of its rarity. Prof. Thomas, in his treatise *On the Diseases of Women*, quoting only two cases in which it occurred.

The subject of this case was æt. 23, tall, thin, and feeble constitution, who was delivered of her first child August 3d, 1869, under the care of Dr. Merriman, after a natural but somewhat protracted labour. The after-birth was adherent, the cord very small and tender. The child was a female, weighing six pounds. Five days after confinement Dr. M. was called in to see his patient on account of some difficulty she experienced in voiding her urine, and while introducing the catheter he discovered the inverted uterus low in the vagina. The next day I was called in consultation. Up to this time there had been considerable flooding and much uneasiness on the part of the patient, but not sufficient to create much alarm. Dr. Taggart being also subsequently called in consultation, he advised an operation to restore the organ, to which a cordial consent was given on the part of all the physicians present, and the patient and her friends. Therefore, on the seventh day after confinement, Dr. Taggart, assisted by Drs. Strong, Merriman, and myself, made an unsuccessful attempt to restore the organ under the influence of ether, which lasted about one hour, but without success, owing to the too rigid contraction of the circular fibres of the neck of the uterus. The rubber-bag pessary was introduced, an anodyne administered, and the patient placed in bed quite exhausted. Ten days after the operation I was called in to see both mother and child. The mother was quite feeble, and was labouring under a severe cough; had had but little flooding, and the condition of the womb remained unchanged; she nursed the babe, which had diminished in weight from six to three pounds. After making three or four visits both appeared much better, and I discontinued my attendance. She began to stand alone and walk a little four weeks after the operation, but without any apparent change in the condition of the womb. About this time she removed to a distant part of the city, and I did not see her again until the 1st of October, nearly two months after her confinement, when I found by an examination per vaginam that the uterus was completely restored to its normal character.

According to my advice and instruction she had watched the progress of events as well as she could. About six weeks after delivery she noticed a change was taking place. The tumour was evidently rising high and diminishing in size, and this change continued to go on until she could not feel the tumour. So between the sixth and eighth week after delivery nature restored the uterus without external aid. After weaning the child the catamenia appeared and she menstruated for two years thereafter and until her death, which occurred some six weeks ago of pulmonary hemorrhage. Her lungs were unusually tuberculated.

Taking the history of this case in connection with the new doctrine of *post-partum* involution by fatty degeneration, the probability is there would be but little difficulty in returning the womb at or about the sixth or seventh week post-partum, for at this time the fibres have but little contractility or power of resistance, and the body of the organ could be pretty readily passed through the neck by the hand and plug operation.

Absorption by Suppurating Surfaces. By A. YOUNG, M.D., of Prescott, Pierce County, Wisconsin.

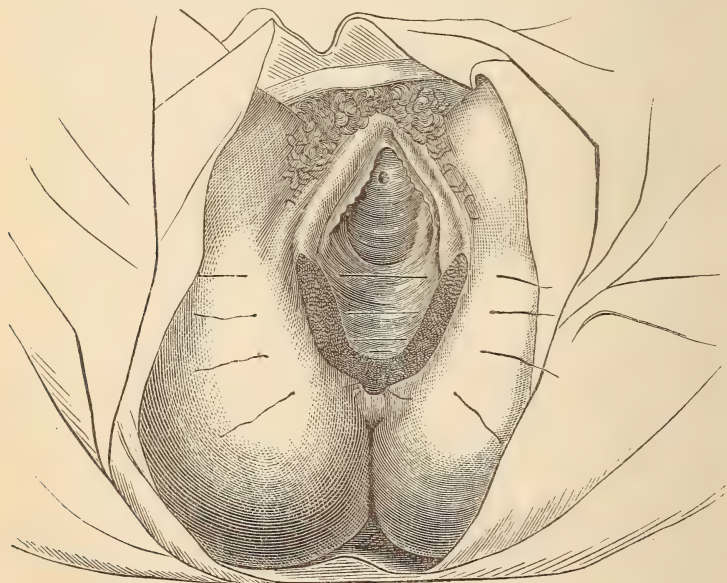
In the number of the *American Journal of the Medical Sciences* for July, 1873, page 140, Dr. John Ashhurst, Jr., in an article on iodoform, expresses his "doubts whether drugs are absorbed to an appreciable amount by suppurating surfaces." As bearing upon this subject, and for the benefit of those who might be led by so high an authority to omit due

caution in the external use of active drugs, I desire to state that recently in a case of a severe and painful suppurating burn, occurring in a woman, I ordered an ointment containing fifteen grains of powdered opium to the ounce. This was applied more freely than I anticipated, probably two ounces being used in the dressing, and within twelve hours narcotism was developed to such a degree as to seriously endanger life.

DOMESTIC SUMMARY.

Treatment of Laceration of the Female Perineum.—Prof. D. HAYES AGNEW (*American Supplement to the Obstetrical Journal of Great Britain and Ireland*, June, 1873) speaks, after further experience, with great confidence of the value of his operation described in 1867 (*Pennsylvania Hospital Reports*) for the cure of lacerations of the female perineum. "The chief points," he says, "of practical interest are the closure of the recto-vaginal septum, and the restoration of the perineal continuity at a single operation; the use only of the interrupted wire suture, and no lateral division of the sphincter, as advocated by some surgeons. The plan of treatment is as follows:—

"The bowels are freely moved early in the day previous to the operation, and, after the action of the medicine, one or two grains of opium are administered, in order to prevent the descent of feculent matter into the rectum. After etherization, the patient is placed on the back, in the lithotomy position, the limbs supported by assistants, and the sides of the laceration denuded to the extent of one inch in breadth, removing the thinnest possible layer of tissue. Next, the recto-vaginal septum is freshened. This is sometimes best



done with the scissors. This constitutes the first stage of the operation. The second consists in the closure of the parts. A long needle, supported on a handle—the eye being near the extremity—is armed with an iron thread, which has been well coated with silver. I use for the first suture iron, in order that

it may not break, as is sometimes the case with the silver wire. Indeed, the whole success of the operation depends upon the proper disposition of this suture. The needle is entered three-quarters of an inch from the margin of the wound, below its lowest point, at the anterior part of the ischio-rectal fossa, and carried forwards and upwards, until it appears on the middle of the vaginal surface of the septum, just above the line of denudation; the thread is then picked out of the eye of the needle, and the latter withdrawn, and made to pass unarm'd through the corresponding parts on the opposite side, emerging on the septum, close to the first. The wire is now passed through its eye, and, as the needle is withdrawn, makes the complete circuit of the wound, so that when it is tightened, the parts are purs'd together. Two or three other silver sutures are inserted, the blood carefully sponged away; or, what is better, washed away by a stream from a syringe, and the parts approximated, to favour which the limbs should be brought together. To maintain the apposition, perforated shot are run down the wires, and clamped with a pair of compressing forceps. a superficial suture is sometimes inserted with a curved needle between the deep ones.

"The subsequent treatment consists in securing the limbs of the patient together, removing the urine two or three times in the twenty-four hours, or by allowing a self-retaining catheter to remain in the bladder, having a small rubber tube attached to its extremity, in order to conduct the urine into a vessel properly placed.

"The bowels are to be kept quiet for seven or eight days with opium, and any painful accumulations of flatus in the rectum are to be removed by carefully introducing a female catheter.

"The diet should consist of milk, animal broth, eggs, cream, toast, and, after the fifth day, some solid food. The stitches are not removed until the seventh day; and on that day, or the day following, the bowels should be opened by administering small doses of castor oil, or some saline, at considerable intervals (two teaspoonfuls of oil every fourth hour). The utmost caution is to be observed in securing this first evacuation. The nurse should be directed to support the nates—the patient to avoid any strong straining effort—and, if necessary, the contents of the rectum may be softened by throwing into the bowel—very gently—a little warm water. It may happen that the rectum becomes impacted with a large mass, the expulsion of which would certainly tear asunder the tender line of union; and then it is proper to core the mass, by picking a channel through its centre, and so enlarging this opening until its peripheral walls fall together, and may be safely expelled. Once opened, the bowels should be locked up for four or five days, in order that the cicatrix may become solid."

Rupture of Axillary Vein during efforts at Reduction of Dislocated Shoulder of six weeks' standing.—Dr. D. HAYES AGNEW reports (*Phila. Med. Times*, Aug. 16, 1873) the following case of this rare accident:—

The patient, a female, aged 60 years, suffered a sub-coracoid luxation of her right shoulder. Several unsuccessful attempts at reduction had been made before she applied to Dr. Agnew for treatment. The dislocation, which was now of six weeks' standing, Dr. Agnew endeavoured to reduce by the method of La Mothe. Failing in his first effort, he tried again, having attached a fillet to the arm. Steady and persevering extension was exerted for several minutes, while an assistant's hand was held in the axilla to guide the head of the bone towards the glenoid cavity. Just after this second effort was completed without success, a sudden and rapidly forming swelling appeared over the right pectoral region, distending in an instant the entire right breast, rendering it exceedingly prominent, and forming a firm but fluctuating tumour.

Simultaneously appeared the most alarming symptoms of marked alteration in the circulation. The patient instantly became cold, clammy, and collapsed; respiration ceased, the eyelids were half closed, and the heart's action was barely perceptible over the apex, and not at all at the radials. Professor Agnew's thumb at once compressed the subclavian artery, while the tongue was drawn forward by a tenaculum, and cold douches, ammonia, artificial res-

piration, etc., instantly tried. At first it seemed that the patient would die in a condition of fatal syncope; but by the opportune presence of a strong electric battery, the current was quickly passed along the phrenic nerves, and in a few moments feeble respiratory efforts became visible. The application was continued for fifteen minutes, at the end of which time the patient had rallied so that the pulse was plainly perceptible at the wrist, and the surface commenced to show signs of warmth and life.

Preparation had meanwhile been made to ligate the subclavian, but upon removing the pressure it was found that the pulse could be felt at the wrist with a force equal to that of the other side; that the tumour was not tense and distended, and that it did not pulsate, neither did it seem to be filling with any rapidity or force.

The conclusion was therefore educed that the axillary or some other large vein had been ruptured, rather than the artery. No small vessels could have yielded so large and rapid a hemorrhage. Firm compresses were therefore applied over the swelling, and confined by a broad bandage, while pressure was kept up for two hours upon the subclavian artery, in order to lessen the supply of blood coursing through the arm.

Meanwhile stimulants were freely administered, and artificial heat constantly applied to the extremities, and in three hours reaction was established to such extent that the patient seemed out of immediate danger.

The swelling, which was accurately defined by the pectoral fascia, extended slowly backward, but did not increase in tenseness. The patient passed a comfortable night, complaining, however, of stinging pains in the arm and breast, but with no further symptoms of depression. From this time onward her improvement was rapid, the pain and swelling gradually subsiding, and in ten days she was discharged from the ward. The blood gravitating downward and backward below the fascia finally made its appearance beneath the skin, where it remained until it was absorbed, weeks afterwards. Compression was continued for several weeks, followed by stimulating liniments; and now, ten weeks afterward, having declined any further attempts at reduction, she has an arm which, although stiff and somewhat painful, seems to be forming for itself a new articulating cavity upon the inferior costa of the scapula.

Dr. De Forrest Willard appends to the report notes of 23 recorded cases of rupture of an axillary vessel produced by efforts at reduction of old dislocations of the shoulder. Of these cases, 17 are recorded in Hamilton's *Treatise on Fractures and Dislocations*, 4th ed., pp. 563-4; 3 in Erichsen's *Science and Art of Surgery*, Phila., 1869, p. 307; 1 in *Am. Journ. of Med. Sci.* for April, 1865, p. 498, and 1 in *Med. News*, for April, 1873, p. 58. Dr. Willard also includes Adams's case (*Holmes's System of Surgery*, vol. ii.) of rupture of the artery by the same force which caused the dislocation, and to which should be added the similar cases reported by Bérard and by Sir Astley Cooper (*Dislocations and Fractures*, Phila., 1851, p. 334). In Mr. Callender's excellent paper on this subject (*St. Bartholomew's Hosp. Rep.*, vol. ii. p. 96) there may be found notes of two cases not included in Dr. Willard's list. One of these is a case, like Dr. Agnew's, of rupture of the axillary vein only, in an aged female, after efforts at reduction according to White's method. In the other case the artery was ruptured by the direct force of twelve or sixteen men, under the direction of a "bone-setter."

From a study of the cases recorded, Mr. Callender (*loc. cit.*) concludes that "the occasional occurrence of this accident does not rule against the recognized practice of attempting the reduction of old dislocations, but should make us cautious of using movements calculated to overstretch the vessel, such as circumduction and extreme tension, as by White's method."

Treatment of Diphtheria with Calomel and Soda.—Dr. EDWARD L. DUER, of Philadelphia, highly extols (*American Supplement to Obstetrical Journal of Great Britain and Ireland*, July, 1873) the efficacy of small doses of calomel and large doses of the bicarbonate of soda, and the free use of nutritious food and brandy. He states that he has treated a large number of cases of all grades of severity by this plan during the past season with satisfactory re-

sults, and he acknowledges his indebtedness to Dr. Harlow, in the first instance, for the suggestion of this plan of treatment.

The two following cases will illustrate this mode of treatment.

"Grace V., æt. five years, previously strong and well; after short prodromic symptoms and a marked chill, presented all the general and local evidences of diphtheria. Her pulse was 140, quick and feeble; skin hot, face suffused; temperature in the morning, $103\frac{1}{2}$; great restlessness, bowels irregular, and the tonsils, with a dark background, were almost covered with the dirty-white, closely adherent diphtheritic membrane.

"Her sister Alberta, æt. 7, was taken sick the same morning, and presented an almost identical condition. The one was put at once on the chlorate of potassa treatment; 10 grains every third hour, as recommended by Vogel, and the other on calomel and soda, $\frac{1}{8}$ gr. of the former, and gr. v of the latter, every two hours. The only topical application was used alike in both cases, a weak solution of carbolic acid as a disinfectant, and the same supporting and stimulating plan was adopted in both. The following morning I noted little change in either case, excepting that Gracie had more difficulty in swallowing, though I may remark that neither of the children could swallow fluids without having them occasionally gush from the nostrils. During my evening visit on the second day, however, I noted the most marked improvement in Alberta, while Gracie's symptoms showed little evidence of yielding.

"Having now continued the calomel thirty-six hours, believing its effect to be rather in proportion to the time of continuance than to the entire quantity given, I withdrew it and continued the soda as before. By this time, in this case, the false membrane was coming away in detached fragments, and there was little evidence of local trouble left, but in the case of the other child, there had, as yet, been no change for the better. On the evening of the fourth day I found Alberta's tonsils again covered with false membrane, when I renewed the use of the calomel for twenty-four hours, with the same positive result. From this time the soda, which had been continued throughout the attack, was depended on entirely. At no time did the little patient show the slightest evidence of ptialism, but as soon as she had been long enough under the influence of the calomel the false membrane seemed to yield up its connection with the tonsils, while at the same time the general symptoms began rapidly to abate. On the morning of the fifth day, the temperature had fallen to 99° and the pulse to 90, and from that time she steadily improved, and convalesced under the use of tonics and nutritious diet.

"On the other hand, Gracie, to whom the potass. chlorat. had been given, continued so alarmingly ill that I was induced to substitute the calomel and soda treatment on the fourth day, and with a like immediate result so far as the local trouble was concerned, but her convalescence, unlike her sister's, was protracted, tedious, and subsequently complicated with bilateral paralysis of the palate and lower limbs.

"In the course of a few weeks, I had occasion to treat five other children in this family, and it is scarcely necessary to say that the same plan was adopted, all responding quickly and positively to it."

Excessive Vomiting during Pregnancy.—Dr. M. A. Pallen, formerly Prof. of Obstetrics in the St. Louis Medical College, relates (*St. Louis Medical and Surgical Journal*, September, 1873) an interesting case of this in a patient whom he was called, July 16th, by Dr. Alleyne to see in consultation. Dr. A. stated that the lady was in the sixth month of pregnancy and would not retain anything on her stomach—no food, no drink. He stated that unless she was relieved she would die for want of nourishment, and that the induction of abortion was the remedy. Dr. P. found her with a pulse of 96, incessant nausea, vomiting whenever anything was taken into the stomach; sleeplessness at night or during the day, no delirium, no tinnitus aurium; no dimness of vision. I claimed a delay of twenty-four hours to try two remedies heretofore untried. One was the hypodermic injection of morphia over the region of the stomach, and the other was the injection of beef essence and brandy into the rectum. On the next day we again visited our patient. The remedies had done no good.

She vomited, as ever, the little ice-water she took, and the injections could not be retained at all.

Dr. P. then ascertained by examination with the finger that there was granular erosion of the cervix, and was of the opinion that nothing effectual could be done short of abortion. Of the various methods recommended for that purpose, he determined to employ that of puncturing the membranes for the following reasons: "The child was not viable and could not be saved. I have known cases, when the child was viable, as in the eighth or ninth month of pregnancy, and when I brought on premature labour to allay excessive and uncontrollable vomiting, that the vomiting did cease, almost immediately after the rupture of the membranes and before the emptying of the uterus.

"With a small-sized uterine sound I punctured the membranes. On the evening Dr. Alleyne called for me and told me that in an hour after the operation, she took, with decided appetite, some beefsteak and retained it; at night she did the same, and when we saw her in the morning, she and her mother informed us that she had slept well, and that she had a good appetite, having eaten various things for breakfast. About forty-eight hours after the operation the foetus and secundines came away, and she made a rapid recovery.

"I am aware that there is high authority against the emptying of the uterus in cases of excessive vomiting during pregnancy. I am aware, too, of the sudden and favourable changes which sometimes take place in such cases. The experienced physician can often foresee that such will be the result, and he will persevere with his remedies. I will admit that it does happen, even when he despairs. But it also happens, that although our patients occasionally get well, when we expect them to die, on the other hand, they sometimes die when we expect them to get well. We must reason from a general rule, and not from an exception."

Cancrum Oris successfully treated by a Saturated Solution of Iodine.—Dr. J. G. MILLER reports (*Kansas City Medical Journal*, August, 1873) three cases of cancrum oris successfully treated by tonics and the local application of a saturated tincture of iodine prepared by putting as much iodine into the compound tincture as it would dissolve.

Ligature of the External Carotid Artery.—Dr. L. R. LONGWORTH observes (*Archives of Scientific and Practical Medicine*, May, 1873) that "the greatest difficulty of securing the artery and the apprehended danger of secondary hemorrhage, have so far influenced the minds of surgeons, that ligature of the external carotid, compared with that of the primitive vessel, has been a very rare operation, and would, in all probability, have been still rarer, were it not for the fact that the former operation possesses two advantages over the latter, viz., first, that it is more efficient in arresting the circulation in the parts beyond the ligature, unless at the same time with the common carotid the internal carotid be also ligated; and, secondly, that it is free from certain grave dangers incident to the latter operation consequent upon interference with the cerebral circulation and the nutrition of the brain."

Dr. L. fully discusses the relative advantages and disadvantages of these two operations, and gives the following as his general conclusions:—

"1. That ligature of the common carotid is the widest in its application, but most dangerous and least efficient.

"2. That ligature of the external carotid below the digastric and stylo-hyoid muscles is more limited in its application, but less dangerous and more efficient.

"3. That ligature of the external carotid above the digastric and stylo-hyoid muscles is the most restricted in application, but also safest and most effectual.

"4. That ligature of the external carotid on both sides has hitherto been uniformly successful, and is the most efficient measure at our command for arresting the distal circulation."

Ovarian Tumour removed by Enucleation.—Dr. WALTER BURNHAM, of Lowell, Massachusetts, reports (*Boston Med. and Surg. Journ.*, July 24, 1873) a case of this. It was his one hundred and ninety-ninth ovarian operation,

and he says that the operation required somewhat less time than his previous ones.

After opening the abdomen and drawing from the cyst, with Wells's ovarian trochar, nearly fifty pints of clear, limpid serum, he made a small slit through the peritoneal coat near the pedicle, and with the handle of my scalpel separated the two coats from each other to a small extent, until I could grasp them in either hand, and at once completed the separation by pulling them apart, and thus removed the entire sac proper as belonging to the tumour; while that portion composed of peritoneum was laid back upon the abdomen, that I might examine it, and wait a little for hemorrhage to start, if at all. The effects of the atmosphere, though at a high temperature, soon contracted and corrugated the peritoneum to less than half its size, when I separated the cyst from it. On examination of the inner surface of the peritoneum, I found the vessels spread out upon it in a complete network, like that of an inflamed conjunctiva largely magnified; but there was no hemorrhage, except one small artery where I divided the peritoneal coat; and here a small clot had formed, and I thought best to put on a ligature, as I did also on one upon the omentum, leaving the ends out at the lower angle of the incision, to keep it open for the discharge of any matter that might be deposited in the cavity.

After waiting more than an hour to allow the force of the heart to return, the sac was covered by a warm napkin before returning it into the abdomen. But finding no bleeding, I then placed it back into the cavity of the abdomen, and closed the wound by three sutures, one of which I passed through the edge of the peritoneum where I made the slit, to secure that point to the opening, in case any clot should form and require suppuration to remove it. Over this, adhesive straps and a compress of cotton, to fill the vacuum of the abdomen, were placed upon her, secured by a straight bandage. The patient made a speedy recovery.

Dr. B. remarks, somewhat singularly, that he *believes* "Dr. Miner, of Buffalo, was the first to recommend this mode of treating the pedicle," and adds that "much credit is due to him for what seems to me a very great improvement over all others."

Recent Cholera Epidemic in New Orleans.—Prof. Jos. JONES, in a letter to the editors of the *Boston Med. and Surg. Journ.* (July 31, 1873), states that this epidemic "which commenced in the early part of February and disappeared in the latter part of June, was less severe than in the two previous visitations of this pestilence in New Orleans. Although the fatal cases were marked by the prominent symptoms of Asiatic cholera, and presented, upon post-mortem examination, its characteristic lesions, the vast proportion of the cases, 'when taken in time,' yielded readily to treatment, and the mortality has been comparatively small. Thus, during the months of February, March, April, May, and June, 117 whites and 116 blacks (total, 233) died from what was registered in the official mortality reports as cholera sporadica; and cholera morbus and cholera infantum destroyed 62 whites and 22 coloured; diarrhoea and dysentery, 109 whites and 48 coloured; total deaths from all intestinal diseases during the past six months, white 366, coloured 234 (total, 600).

"This comparatively small mortality from cholera in a population of 200,000; and as the whites constitute about three-fourths, and the coloured people only one-fourth, it is evident that cholera, as well as other intestinal diseases, has been much more fatal amongst the coloured population. This difference appears to be due in a large measure to the fact, that as a general rule, the coloured people occupy the more unhealthy and crowded portions of the city, and are less careful in their habits and diet.

"The sudden subsidence of the cholera, is not to be referred to the sanitary condition of the city, which could not, perhaps, be much worse at this season of the year; nor to the universal employment of any special means of disinfection. Numbers of cases have occurred in localities where no disinfection was practised, and it is probable that only the severe and fatal cases have been reported to the local sanitary officers. The peculiarly mild character of the recent epidemic, may be due to certain unknown conditions of the atmos-

phere and soil, and to the heavy rain-fall, almost twenty-two inches of water having fallen during the past six months."

Child's Head Impaled on a Pitchfork.—Dr. W. M. GOODLOVE reports (*Clinic*, September 6, 1873) a case of this which is interesting as affording another example of the many already recorded of the deceptive nature of the early symptoms in injuries of the brain.

A child, thirteen months old, in the arms of her sister, was near the side of a stack of grain, when a pitchfork was let slide down the stack with the tines forward, one of which entering the child's head at the junction formed by the right parietal and frontal bones, passing obliquely downward, penetrating the right hemisphere of the brain, and emerging beneath the malar bone about half an inch in front of the ear. The little girl (still holding the child) withdrew the fork before the father could get to her assistance.

When seen by Dr. G., thirty minutes afterwards, the child was *nursing at the breast*. After the fork was withdrawn the child cried. It caused no shock.

The next day, July 23d, Dr. G. found the child sitting in the mother's lap laughing, showing no signs of pain; bowels were moved twice through the night; temperature was normal; voluntary motion was good; the pulse was good. It had rested well all night, except during paroxysms of coughing. Here I learned that the child had had a severe whooping-cough, and when it coughed a slight hemorrhage ensued from the orifice of the wound, but not of much moment.

24th. Patient resting well; cough not troubling it so much; pulse accelerated; pupils contracted; no nervous excitement yet developed. The child does not nurse so often. Its head has been kept elevated and the wound discharges more freely.

25th, 7 A. M. Patient has taken more nourishment to-day. It is marvellously better than yesterday. The pulse is somewhat stronger, though oppressed. Ice applications still continued. 8 P. M. Wound inclined to heal below; cough better, bowels not moved. It will not nurse. 10.30 P. M. Patient very restless, with quick pulse; disturbed sleep; anorexia; sub-sultus tendinum; face flushed; pupils contracted; wound inclined to heal.

26th, 7 A. M. Tetanic symptoms decidedly present. Inflammatory and arterial action abated. Total paralysis of the right eye and left extremities; contraction of pupils and some squinting of the left eye.

27th, 9 A. M. Convulsion alternate with coma.

28th, 2.30 A. M. Patient has rigors at times and is comatose at times. Death in convulsions.

We have omitted the account of the treatment.

Gunshot Wound of Stomach and Kidney; Recovery.—Dr. BROOKS reports (*Chicago Med. Journ.*, Sept. 1872) the case of a man, æt. 30, who accidentally shot himself at 11 A. M., Dec. 31, 1871, in the epigastrium, the ball, a half ounce one, taking a downward, backward, and slightly lateral direction. When seen by Dr. B., five minutes afterwards, there was great nervous shock, cold, clammy skin, great prostration, constant nausea, pain in the stomach, restlessness, respiration feeble, and some thirst. Surface wound about two inches to the left of the centre of the sternum, having cut the size of the ball from the lower edge of the cartilages of the false ribs. Directed him to be removed to an upper room and laid recumbent, head low, a cloth wrung from hot water to be placed over the wound and to be kept constantly applied, small pieces of ice (as large as a small filbert) placed in his mouth. An opiate was also given a few hours afterwards. At 8.15 P. M. vomited between one and two pints of coagulated blood; at 9.10 P. M. passed about three pints bloody urine, resembling the blood that flows from the veins of an individual killed by lightning; a fourth drachm was now given. At 10.20 P. M. reaction commenced feebly; from 11 P. M. to 3 A. M. slept quietly, and on awaking vomited a large quantity of blood, which was the last blood vomited; at 4 A. M. passed an ordinary urinal half full of fluid, mostly blood; from this time he urinated about once in six hours, blood always passing till the fifth day, when the urine was of a natural colour and quality.

"After the first sixteen hours he had no pain whatever, and slept well every night. At the expiration of forty-two hours he was allowed one teaspoonful of iced milk, in four hours two teaspoonfuls; this was gradually increased till on the fifth day he was allowed one-third of a tumbler of the iced milk every six hours. Not an untoward symptom occurred. The hot cloth wet, was kept applied up to Jan. 6, 1872. No other medicament was used. The fourth day the bowels moved naturally. On Jan. 8th, he was removed to his home in the country. On or about May 1st, he returned to the city, and followed his occupation as a carpenter. On examination the 7th of May, I found the ball under the skin, about two and a half inches from the spinous processes of the vertebræ, and nearly outside the eleventh rib of the left side, having passed out of the abdominal cavity between the eleventh and twelfth ribs. The direction of the ball, the vomiting of blood, the passing of blood by the urethra, the character of the shock and prostration, point unmistakably to the cutting of the stomach and left kidney by the ball."

RECLAMATION.

To the Editor of the American Journal of the Medical Sciences.

SIR: Surgeon G. A. Otis, who has prepared, under the direction of Surgeon-General Barnes, United States Army, the Surgical History of the War of the Rebellion, at page 26 of the Introduction to the First Part lately published, has called attention to a paper of mine, written early in 1871, and published in the fifty-fourth volume of the *Medico-Chirurgical Transactions*, on the Classification of Injuries and Surgical Operations in time of War, in a way that makes it imperative on me to reply at some length. Although the general purpose of my paper is briefly referred to at the commencement of Dr. Otis's remarks upon it, the words subsequently quoted without their context, and the comments upon them, might cause it to appear that I have attempted to depreciate the professional labors of the surgeons of the United States during the great struggle, the miseries of which they were doing their best to alleviate. Nothing could have been further from my intention, and it appears to me that such an interpretation is not warranted by anything contained in my paper. I have always admired the zeal and the immense self-sacrificing devotion of the United States surgeons, as well of the volunteer service as of the regular army, during the prolonged war, and have never expressed any other sentiments on the subject. But I have thought, with regard to the compilation of their labours, that much time and pains would have been spared had there been employed a system of classification of the injuries, which they had not only to treat but also to tabulate in statistical returns for official information, different from that which was used for the purpose. At the same time I did not ascribe it as a fault to any one that a different classification was adopted from that which seemed to me a more efficient one. I knew that during the Crimean War for the first five months, chiefly in consequence of no efficient system of classification having been supplied, the English statistical returns were found so valueless for scientific purposes that the attempt to use them in detail was altogether abandoned. It was from experience of the results of the form of classification which was employed in 1855 in the Crimea, and from much consideration of the subject, that I was led to consider that form the best calculated to insure accurate returns of the injuries of war in the first instance, and to secure facility of compilation afterwards, but I did not pretend to dogmatize on the subject; what I asked in my paper was that this form should be considered along with others by competent persons. Dr. Otis writes that "systems" must be made to conform to national habits and organizations, but this can hardly apply to systematic returns of injuries which are universal in their nature and quite uninfluenced by national peculiarities. The best form of classifying the wounds

resulting from war, whatever it may be, in one country must surely be the best in another country.

Dr. Otis quotes part of my remark as to the figures of the American Field "Tabular Statements" being "almost practically worthless." It may be observed that Dr. Otis himself, at page 25 of his Introduction, quotes from an official circular that "the surgical statistics of the war were absolutely worthless" previous to September, 1862, owing to the nature of the returns then in use. I only discussed the question whether the revised forms of returns subsequently adopted were calculated for giving statistical information of as much scientific value as other forms of returns. In the surgical history, so far as it has gone, Dr. Otis has reclassified the figures of the field returns, after great research and labor, in forms essentially different from the original ones; forms very similar indeed, though more extended, to those which I advocated for the primary returns. The remark of Dr. Otis, that a classification which may be excellent for the British Army with its corps of trained medical officers could not have been advantageously introduced into the American service chiefly attended by civil surgeons, seems to be an unnecessarily disparaging one. The British surgeons had no special training when the form of classification which I described was placed in their hands, and I never heard that they found any difficulty in following its directions.

I regret very much the unintentional mistake (Dr. Otis calls it a misrepresentation) which I made as to the number of persons at one time engaged in preparing the records of the war in the Surgeon-General's office at Washington. Some years ago an American military medical visitor at Netley, speaking of the energetic and vast scale on which the history of the war was being prepared, told my colleague, Dr. Mackinnon, and myself that there were quite two hundred clerks engaged in preparing the records when he left Washington. He certainly did not mean the purely surgical records, and I did not understand him to mean so, but the records in all their branches; and I was surprised on referring to my paper after reading Dr. Otis's comments upon it to find I had limited the statement to the surgical statistics. I can only account for it by the surgical results of the war being uppermost in my mind at the time of writing the paper. But I think any one fairly reading my remarks would not fail to notice that I intended the general history of the war, for in the next sentence, when comparing the number of persons engaged in compiling the English history of the Crimean War, I did not confine myself to the compilers of the surgical part, but spoke of the whole of the historical record of the war. I fell into an error, however, for which I express my regret, and which I am glad Dr. Otis has corrected; and I can only add, that as I sent copies of the paper to the Surgeon-General's office as soon as it was printed, if Dr. Otis or any one had then indicated the exaggeration in my statement, I would have gladly taken steps to correct it myself.

I refrain from entering upon personal topics, such as the omission in the work under notice, of all mention in the lists of writers published at p. 23 of the Introduction of an essay of mine on Gunshot Wounds in *Holmes's System of Surgery*, which was reprinted in the United States during the war, and even made one of the articles of the standard supply table of the military hospitals. and some similar matters, but will merely repeat my regret that the remarks in my paper on classification should have given the offence to Dr. Otis which they evidently have done; they were not intended to be offensive to any one. What I am especially anxious to explain is, that my paper, which I know not many United States surgeons are likely to see, in no way has reference to the professional work done by American surgeons in the field, or to anything else but the arrangement of the returns in which their work was ordered to be classified and tabulated for statistical purposes. I must leave those who possess the paper to judge whether the remarks in it are worth any attention or not.

I have the honor to be, etc.,

THOMAS LONGMORE,
Surgeon-General.

NETLEY, July 7, 1873.

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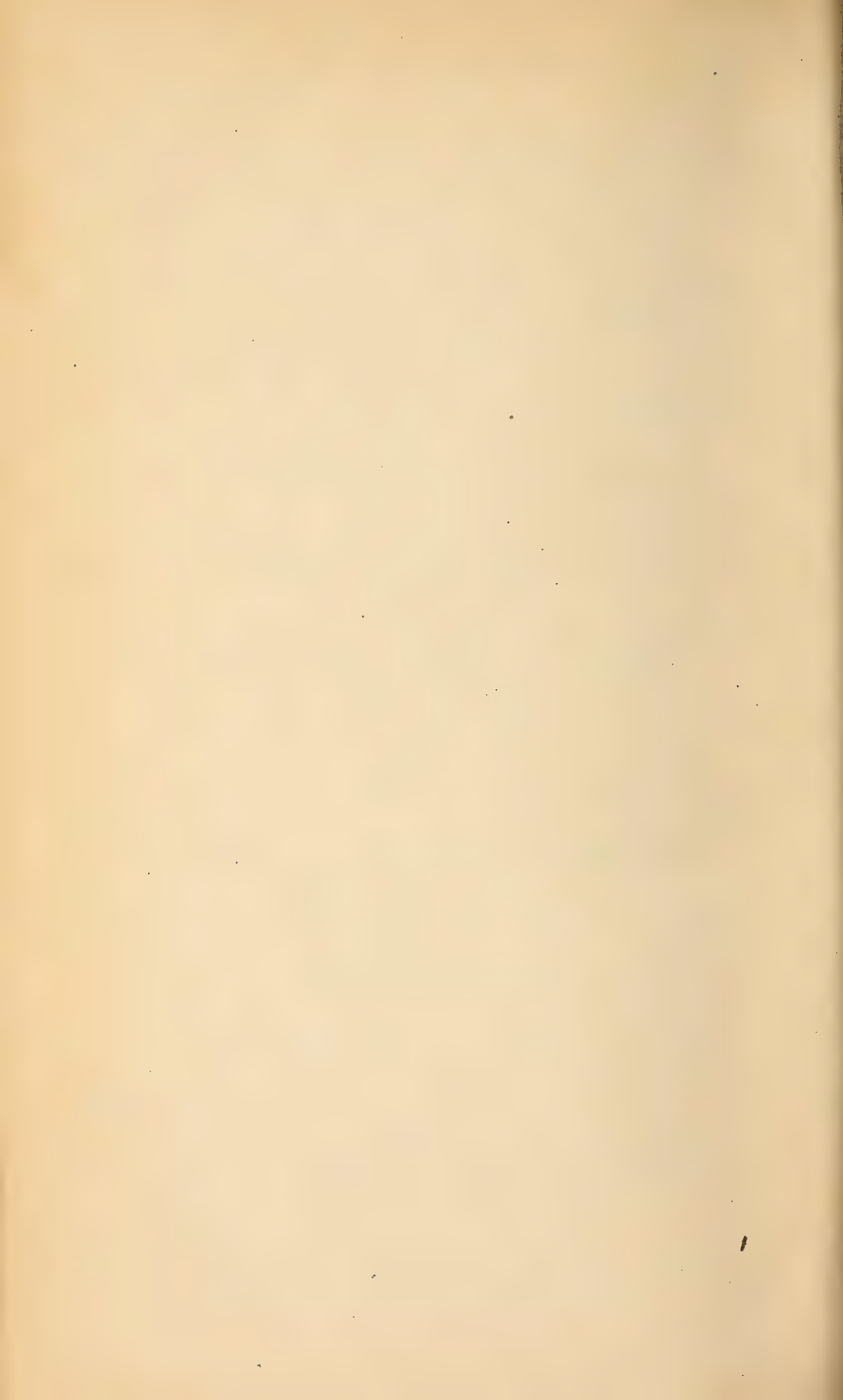
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